EXHIBIT B

EMC Data Manager

Software Release Notes

EDM Release 4.5.0

P/N 300-113-004-06
Rev F

EMC²

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1 About This Release

Product Features

This chapter describes EMC Data Manager (EDM) 4.5.0, including these features:

- Network Backup Features
- Offline Backup Support
- EDM Symmetrix Path Features
- EDM Symmetrix Connect Features
- Year 2000 Compliance
- New Features for 4.5.0
- EDM Software CDs
- Customer Documentation
- Customer Service Documentation
- EDM Online Documentation
- Technical Support
- Reader Comments

Network Backup Features

This release performs standard network (enterprise) backup and restore functionality, including:

- high-speed filesystem backup of Compaq/DEC UNIX, Hewlett-Packard, IBM, NCR, Pyramid, Red Hat Linux, Sequent, Silicon Graphics, Sun Solaris, and Unisys clients
- online backup of Informix, Oracle, Sybase, and Backint for SAP R/3 database clients
- offline backup of Oracle and Backint (SAP R/3) database clients
- filesystem backup of Windows NT, NetWare, OS/2, and OpenVMS backup clients
- Hierarchical Storage Management (HSM) option and baseline backup
- online backup of Microsoft Exchange, SQL Server, and Lotus Notes

For current, detailed information, see Chapter 2 "Supported Devices, Platforms, and Clients".

Offline Backup Support

If updating from EDM 4.3.1 or earlier, be aware that the EDM Offline Database Backup feature that was formerly included in EDM for Oracle, Sybase, and Informix databases is no longer available for backups (as of EDM 4.4.0). EDM continues support for restores of backups already taken with this feature.

This legacy offline feature enabled simple offline backups and restores, over the network, of databases on UNIX platforms. It was not integrated with any database vendor backup tools.

EDM continues to support offline (and online) backups of Oracle databases with the EDM Oracle Backup Client and with the EDM's EMC Backint backup client. EDM supports online backups of Sybase and Informix databases with the EDM Sybase Backup Client and the EDM Informix Backup Client.

EDM Symmetrix Path Features

EDM Symmetrix Path enables an EDM to back up clients through direct SCSI or fibre channel connections to a Symmetrix, rather than over a local area network. The Symmetrix itself acts as the network, enabling better backup and restore performance. Symmetrix Path works in a single or multiple Symmetrix environment.

See "Supported Clients for EDM Symmetrix Path Backups" on page 2-13, and the *EMC Data Manager Symmetrix Path User Guide* (P/N 300-113-007) for more information.

EDM Symmetrix Connect Features

EDM Symmetrix Connect provides high-speed backup and restore of very large database data. You can back up data that resides on one or more Symmetrix systems onto one or more tape library units, cabled directly to the EDM server unit. Typically, database sizes that are too large for efficient network backup are in the range of 200 GB to several terabytes.

EDM Symmetrix Connect backs up and restores UNIX filesystems and UNIX Oracle databases on selected Compaq Tru64 UNIX, HP-UX, IBM AIX, Sequent DYNIX/ptx, and Sun Solaris clients. It also backs up and restores Windows NT Exchange, SQL Server, and Oracle databases, and Windows NT filesystems.

See the *EMC Data Manager Symmetrix Connect User Guide* (P/N 300-113-005) and the Windows NT client manuals for detailed information.

In addition, EDM Symmetrix Connect integrated with two database vendor backup tools for backing up Oracle databases. Two standard interfaces are available on some UNIX platforms:

- Oracle's Recovery Manager (RMAN) Proxy Copy feature. See the *EMC Data Manager Oracle Backup Client* guide.
- EMC Backint, the SAP-certified interface to the backup and restore tools of the SAP R/3 system. See the *EMC Data Manager EMC Backint* guide.

Year 2000 Compliance

EMC Data Manager software versions 3.1.1 and later are Year 2000 compliant. Although EMC will not support older versions of EDM and Epoch products for Year 2000 compliance, it has established an update path for older versions.

For year 2000 information, visit our web site at:
`http://www.emc.com/year2000`

New Features for 4.5.0

This section provides an overview of features that are new for EDM 4.5.0

Red Hat Linux Client

EDM 4.5.0 now supports network filesystem backups for Red Hat Linux.

Note: A Red Hat defect causes installation to fail. For the work around, see "Red Hat Linux Install Fails (#32339)" on page 4-51 of these release notes.

Symmetrix Path and Network Backups

Symmetrix Path and network backups for EDM 4.5.0 support:

- Windows NT 4.0 backup and restore for Lotus Notes.
- Windows NT 4.0 Microsoft Cluster Server (MSCS)

Lotus Notes

EDM Lotus Notes Backup Client 1.0 adds support for network and Symmetrix Path backup and restore of Windows NT Lotus Notes clients running Domino R5 Server. For information about Lotus Notes, see the *EMC Data Manager Windows NT Lotus Notes Backup Client* manual and release notes.

Windows NT Microsoft Cluster Server (MSCS) Support

EDM 4.5.0 adds support for network and Symmetrix Path backup and restore of Windows NT filesystems, SQL Server, and Exchange in a Microsoft Cluster Server (MSCS) environment. With this support, the EDM can back up and restore database

data without knowing which host is currently running SQL Server or Exchange, or which host owns the shared filesystem. The EDM backs up and restores data using a virtual server name, and can do so if one of the members of the cluster is running the application. For more information, refer to the appropriate EDM Windows NT Backup Client user guide (Windows NT, Exchange, and SQL Server).

Symmetrix Connect Support for Oracle 7.3

Symmetrix Connect for EDM 4.5.0 supports Windows NT 4.0 backup and restore of Oracle 7.3 databases. You can configure backups and manage restores through the EDM graphical user interface. For more information see the *EDM Windows NT Oracle Backup Client* manual and release notes.

Port Control

The EDM port control feature allows the EDM to communicate with clients on the other side of a firewall. A firewall enforces network policy regarding the restriction of access, based on rules the local firewall administrator sets. Port control allows EDM TCP port usage to behave in a predictable manner so that firewall rules can be implemented.

The port control feature is available for use with UNIX and NT filesystem backups and with UNIX database backups. This feature enables you to control the TCP ports that the EDM uses to communicate with the clients. You can use it to provide network analysis and to audit EDM network activity. It also allows you to take advantage of the router's ability to prioritize packets.

Note: Putting an EDM Symmetrix Path or EDM Symmetrix Connect solution in place moves the data through the Symmetrix and bypasses the firewall policies. Discuss this carefully with your local firewall administrator before you do it.

To use this feature, both EDM and client(s) must be at the EDM 4.5.0 equivalent. For more information, refer to the *EDM Software Reference*.

Install and Update Improvements

Following are enhancements to EDM server and client installations for 4.5.0.

Crontab

When you update to EDM 4.5.0, a copy of the previous crontab file is saved in the /usr/epoch/etc/crontab directory as save_crontab_*timestamp*.

Windows NT Installation

You can now install and de-install any EDM NT client on a network centrally from one EDM NT client, using the graphical user interface. You can also start and remove services remotely, and modify client settings on remote machines. For more information, refer to the appropriate Windows NT client guide.

New Media Types

EDM 4.5.0 supports additional media types:

- StorageTek 9840 drive supporting STK 9740, STK 9310, STK 4410, STK 9360

Media Management

The following EDM 4.5.0 features enhance the Library Unit Manager window of the EDM GUI. These include:

- Saving selected filters and columns as reports, allowing each operator to configure a default
- Finding media based on the time last written. After locating the media, you can eject it for offline or offsite storage
- Finding original backup media, versus duplicates made for archive purposes
- Easy selection and printing of all media on a list
- Additional columns in the media list
- Performance improvements
- Additional sorting capabilities

User Interface Enhancements

The following sections provide an overview of the EDM 4.5 new features in the user interface. See online help for more detailed information.

Backup Configuration Wizard

The Backup Configuration wizard now supports configuration of all backup clients for network, Symmetrix Path, or Symmetrix Connect. To access this wizard, in the Main window of the EDM GUI, select Backup > Configure > Wizard.

A new, interactive command line interface, **eb_config**, allows you to configure clients remotely, in situations where using the Backup Configuration wizard is not possible. This CLI replaces previous client configuration commands, including **eb_dc_config, eb_sybconf_db, eb_backint_config, ntoraconfig, ntsqlconfig,** and **ntexchconfig**.

You can also use both the Backup Configuration wizard and the new command line interface to modify and duplicate already existing configurations, except for network filesystem configurations.

The Backup Configuration wizard and the new command line interface now supports configuration of *EDM-initiated* database backups, for Oracle, Sybase, and Informix.

To configure EDM 4.5.0 database backups, Symmetrix Path backups, or Symmetrix Connect backups, you must update the client software to the most current version, and you must also reinstall the machine as a client of the EDM.

GUI Restores No Longer Supported for Oracle Backup Client

As of EDM 4.5.0, the Restore window no longer supports any restores of Oracle backups taken through the EDM Oracle Backup Client, including network, Symmetrix Path, and Symmetrix Connect (RMAN Proxy Copy).

GUI Restores for Symmetrix Connect

The EDM Restore window now supports Symmetrix Connect.

Note: Exceptions are the Symmetrix Connect RMAN Proxy Copy and EMC Backint applications.

The EDM Restore window supports any Symmetrix Connect backups created using any EDM software release (except for RMAN Proxy Copy and EMC Backint backups).

This includes backups of applications, filesystems, and databases on Sun Solaris, HP-UX, IBM-AIX, Compaq Tru64, Sequent DYNIX/ptx, and Windows NT. Is also displays restore progress information.

Restore Command Line Interface Improvements

A new restore command line interface, **ebrestore**, replaces the existing **ebrecover** command line interface. This command:

- supports the same functionality as the ebrecover command line interface.
- is backward compatible with the ebrecover CLI that shipped with EDM revisions up to and including EDM 4.4.0.
- enables you to use scripts that use ebrecover without modification.

You should migrate to ebrestore as soon as possible.

System Monitoring

The System Monitor GUI includes the following features:

- provides the reason for a failed backup, as reported by edmreport.
- uses DNS to determine the EDM IP address, as well using NIS and /etc/hosts.
- watches RSMD, and can restart it.
- monitors the new edmdispd daemon.
- can report detail and message log events that occur when RASD is not running.
- integrates with media management through /var/adm/epoch/lu_hardware. Sense key events now include general text descriptions.
- does not restart itself and other daemons when the command **edmproc -shutdown** is issued.
- returns to its normal behavior of restarting daemons when the **edmproc -startup** command is issued, or the EDM is rebooted.
- no longer checks the cleaners in offline/offsite library units for available cleaning.
- no longer counts the volumes in the offline/offsite library units as available.

EDM Software CDs

The EDM software is distributed on CDs as follows.

EDM Backup Software CD

EDM 4.5.0 Backup Software (P/N 053-000-364-07 Rev J)

The CD contains EDM Backup and EDM Symmetrix Connect software, as well as support for EDM Symmetrix Path.

EDM Backup Software with HSM Option CD

EDM 4.5.0 Backup Software with HSM Option (P/N 053-000-365-05 Rev H)

The CD contains EDM Backup and EDM Symmetrix Connect software as well as support for EDM Symmetrix Path and the HSM option.

EDM Client Supplement CD

The EDM Client Supplement CD (P/N 053-000-366-08 Rev K) includes:

- NetWare Backup Client Release 3.0.1
- Windows NT Backup Client Release 2.5.0
- OS/2 Backup Client Release 1.5.2
- OpenVMS Backup Client Release 2.1.2
- Symm Tools

Separate books and release notes are provided for each of these individual backup clients.

Individual Database Client CDs

The following EMC Data Manager database backup clients are available on separate CDs, and ship with client-specific documentation.

- EDM Oracle Backup Client 3.0.0
  Includes UNIX and NT
  (P/N 053-000-367-06 Rev D)
- EDM Sybase Backup Client 2.0.0
  (P/N 053-000-369-05 Rev G)
- EDM EMC Backint 3.0.0 for SAP® R/3™
  Includes UNIX and NT
  (P/N 053-000-437-06 Rev H)
- EDM Informix Backup Client 2.0.0
  (P/N 053-000-370-04 Rev E)
- EDM Windows NT SQL Server Backup Client 3.0.0
  (P/N 053-000-363-06 Rev D)
- EDM Windows NT Exchange Backup Client 2.0.0
  (P/N 053-000-445-06 Rev G)
- EDM Windows NT Lotus Notes Backup Client 1.0.0
  (P/N 053-000-583-01 Rev A)

StorageTek ACSLS Tape Libraries Option CD

EDM Option for StorageTek ACSLS Tape Libraries release 1.0.1 (P/N 053-000-449-02 Rev B). This CD contains EDM backup software and support for ACS 44x0 tape libraries.

Customer Documentation

In addition to these release notes, EDM customers receive the following hardcopy documents:

- *EMC Data Manager Software Reference* (P/N 300-113-001-03 Rev C)
- *EMC Data Manager Server Error Messages* (P/N 300-113-014-01 Rev A)
- *EMC Data Manager Storage Devices* (P/N 300-113-002-03 Rev C)

EDM Symmetrix Connect

EMC Data Manager Symmetrix Connect customers also receive:

- *EMC Data Manager Symmetrix Connect User Guide* (P/N 300-113-005-03 Rev C)
- *EMC Data Manager Symmetrix Connect Quick Reference Card* (P/N 300-113-006-03 Rev C)
- *EMC Data Manager Symmetrix Connect Check List (P/N 300-113-011-02 Rev B)*

EDM Symmetrix Path

EMC Data Manager Symmetrix Path customers also receive:

- *EMC Data Manager Symmetrix Path User Guide* (P/N 300-113-007-04 Rev D)

EDM Clients

The following documents list the supported network filesystem backup clients that ship on the EDM Client Supplement CD:

- *EMC Data Manager Client Supplement CD Release Notes* (P/N 300-113-008-06 Rev F)
- *EMC Data Manager Windows NT Backup Client* Release 2.5.0 Guide (P/N 300-119-001-03 Rev C) *Release Notes* (P/N 300-119-002-04 Rev D)

- *EMC Data Manager NetWare Backup Client*
  Release 3.0.1 Guide (P/N 300-114-001-03 Rev C)
  Release Notes (P/N 300-114-002-05 Rev E)
- *EMC Data Manager OS/2 Backup Client*
  Release 1.5.2 Guide (P/N 300-118-001-02 Rev B)
  Release Notes (P/N 300-118-002-04 Rev D)
- *EMC Data Manager OpenVMS Backup Client*
  Release 2.1.2 Guide (P/N 300-122-001-03 Rev C)
  Release Notes (P/N 300-122-002-04 Rev D)

Oracle Backup Client

Oracle Backup Client customers also receive the following with the EDM Oracle Backup Client CD:

- *EMC Data Manager Oracle Backup Client*
  Release 3.0.0 Guide (P/N 300-115-001-03 Rev C)
  Release Notes (P/N 300-115-002-04 Rev D)
- *EMC Data Manager Window's NT Oracle Backup Client*
  Release 3.0.0 Guide (P/N 300-115-003-03 Rev C)
  Release Notes (P/N 300-115-004-04 Rev D)

Database Backup

Customers with any of the following backup clients, (shipped on separate CDs), receive these guides and release notes:

- *EMC Data Manager Sybase Backup Client*
  Release 2.0.0 Guide (P/N 300-116-001-03 Rev C)
  Release Notes (P/N 300-116-002-04 Rev D)
- *EMC Data Manager Informix Backup Client*
  Release 2.0.0 Guide (P/N 300-117-001-03 Rev C)
  Release Notes (P/N 300-117-002-04 Rev D)
- *EMC Data Manager EMC Backint for SAP R/3 System*
  Release 3.0.0 Guide (P/N 300-120-001-03 Rev C)
  Release Notes (P/N 300-120-002-04 Rev D)

- *EMC Data Manager Windows NT SQL Server Backup Client* Release 3.0.0 Guide (P/N 300-121-001-05 Rev E)
  Release Notes (P/N 300-121-002-05 Rev E)
- *EMC Data Manager Windows NT Exchange Backup Client* Release 2.0.0 Guide (P/N 300-119-003-04 Rev D)
  Release Notes (P/N 300-119-004-04 Rev D)
- *EMC Data Manager Windows NT Lotus Notes Backup Client* Release 1.0.0 Guide (P/N 300-119-005-01 Rev A)
  Release Notes (P/N 300-119-006-01 Rev A)

Customer Service Documentation

The following documents are used by EMC Customer Service personnel and are not supplied to the customer:

- *EMC Data Manager Software Installation* (P/N 300-123-001-05 Rev E)
- *EMC Data Manager Epoch to EDM Software Update* (P/N 300-123-004-02 Rev B)
- *EMC Data Manager System Monitoring Support* (P/N 300-123-012-02 Rev B)
- *StorageTek ACSLS Tape Libraries Option for EDM* (P/N 300-123-005-02 Rev B)

Hardware documentation follows hardware, not software, releases. Customer service personnel use the current set:

- *EMC Data Manager Hardware Installation* (P/N 300-123-007-03 Rev C)
- *EMC Data Manager Hardware Maintenance* (P/N 300-123-008-02 Rev B)
- *EMC Data Manager Hardware Upgrade* (P/N 300-123-009-02 Rev B)
- *EMC Data Manager Hardware Release Notes* (P/N 300-123-010-03 Rev C)

EDM Online Documentation

Online help is available from the EMC Data Manager graphical user interface (**edm**). It provides detailed information and procedures for configuring, managing, and monitoring the EDM server, its clients, and library units. Log into the EDM and enter **edm** to display the EDM Main window.

Online Help

You can invoke Help from the yellow question mark or any Help button in the EDM GUI. The Help facility includes context-sensitive help for input fields and options, as well as step-by-step instructions for tasks you need to perform to manage and monitor the EDM server. Use the Online Help Index to find tasks and GUI windows.

Online Books

From the EDM Main window menu bar, select Online Books from the Help menu.

Technical Support

If you need technical assistance, contact the EMC support hotline at:

1 800 SVC-4EMC (1 800 782-4362)

If you are located outside the United States, contact the nearest EMC office for assistance.

Reader Comments

We welcome your comments on both print and online EDM documentation.

Send email directly to:

doc_comments@mil.emc.com

2 Supported Devices, Platforms, and Clients

This chapter contains detailed information about EDM 4.5.0, including:

- Supported Server OS and Platforms
- Supported Clients for Network Backups
- Supported Clients for EDM Symmetrix Path Backups
- Supported Clients for EDM Symmetrix Connect
- EDM/Symmetrix Interoperability
- PowerPath
- Connectrix and Volume Logix
- Oracle Parallel Server Support

Supported Server OS and Platforms

The EDM 4.5.0 software requires Sun Microsystem's Solaris 2.6 operating system and Solaris patches. EMC ships EDM with Solaris 2.6 and the Solaris patches already installed.

The EDM 4.5.0 software supports the following server units (hardware) offered in the EDM cabinet:

- Ultra Enterprise 2 (EDM model EDM2K2)
- Ultra Enterprise 3000 (EDM models EDM3K2 and EDM3K4)
- Ultra Enterprise 3500 (EDM models EDM35K2 and EDM35K4)
- Ultra Enterprise 4000 (EDM models EDM4K2, EDM4K4, and EDM4K6)
- Ultra Enterprise 4500 (EDM models EDM45K2, EDM45K4, and EDM45K6)

The EDM software also supports the server units (hardware) offered in the EDM cabinet for previous versions of EDM.

Supported Clients for Network Backups

Table 2-1 lists all current clients with supported platforms and features. EDM supports filesystem backups for all clients. All clients are high-speed except where noted as standard-speed (STD). *Explanations of acronyms and database abbreviations follow the table.*

Table 2-1 Supported Network Backup and Recovery Clients

Vendor / Platform	Operating System Name	Version	Backup Client Features: Filesystem Clients	Database Clients	Remarks
Auspex					
Auspex 1.7M1	SunOS	4.1.3_U1	Std	None	
Compaq/DEC					
Alpha	Tru64 UNIX (formerly DEC UNIX)	4.0.x	ACL, FB, LFS, LNK, ADV	ORA78, Oracle8i Sybase, Backint, Informix	No port control support.
		5.0	ACL, FB, LFS, LNK, ADV	None	
	Windows NT	4.0	Std, FB, LFS	SQL, Lotus Notes, CC:Mail, Exchange, Oracle8, Backint	Supports Microsoft Exchange V5.0 and 5.5. Notes and CC:Mail require St. Bernard's OFM.
	OpenVMS	6.2, 7.1, 7.2	Std, ACL, LFS	None	Requires DEC TCP/IP for OpenVMS or MultiNet for OpenVMS
VAX	OpenVMS	6.2, 7.1, 7.2	Std, ACL, LFS	None	

Table 2-1 Supported Network Backup and Recovery Clients (Continued)

Vendor Platform	Operating System Name	Version	Backup Client Features Filesystem Clients	Database Clients	Remarks
Hewlett-Packard HP 9000/700	HP-UX	10.10, 10.20	Std, ACL, LNK		
HP 9000 All Classes	HP-UX	10.10	ACL, FB, LNK	Oracle, Sybase, Backint, Informix	Operating system releases previous to 10.10 are not supported. Client platform must be upgraded to this release.
		10.20	ACL, FB, JFS.LFS, LNK	ORA78, Sybase, Backint, Informix	
		11 (32- or 64-bit)	ACL, FB, JFS, LFS, LNK	ORA78, Oracle8i Sybase, Backint, Informix	64-bit support for Oracle8.x is for network only.
IBM RS/6000 & Power Parallel SP2	AIX	4.2.x, 4.3.x	ACL, FB, JFS, LFS, LNK	ORA78, Oracle8i, Sybase, Backint, Informix	
Intel x86	OS/2	3.0 Warp, 4.0 Warp	Std	None	

Table 2-1 Supported Network Backup and Recovery Clients (Continued)

Vendor Platform	Operating System Name	Version	Backup Client Features Filesystem Clients	Database Clients	Remarks
Microsoft Intel x86	Windows 2000		Std	Exchange, SQL7	
	Windows NT server, workstation	4.0	Std, FB, LFS	Backint, Oracle78, Oracle8i, Lotus Notes, CCMail, Exchange, SQL	Supports Microsoft Exchange V5.0 and 5.5. Notes and CCMail, except native R5 client, require St. Bernard's OFM.
NCR Intel 586, 486	UNIX SVR4	2.0.3	FB, LNK	None	No port control support.
System 3000	UNIX SVR4 MP-RAS	3.0	VxFS, FB, LNK	Sybase	
Novell Intel x86	NetWare	3.12, 3.2, 4.10, 4.11, 4.2, 5.x	Std	None	
Red Hat Intel x86	Linux	5.2, 6.0, 6.1	FB, LNK	None	Requires patch from Red Hat. See "Red Hat Linux Install Fails (#32339)" on page 4-51 for details.
SCO Intel x86	SCO Openserver	Rel. 5.0, 5.0.x	Std	None	No port control support.
Sequent Symmetry or NUMA-Q Intel x86	DYNIX/ptx	4.2.3	ACL, FB, EFS, LNK, LFS	None	No port control support. No Sybase support.
		4.4.x	ACL, FB, EFS, LFS, LNK	Oracle78 Oracle8i	LFS is STD. speed. See page 2-16.

Table 2-1 Supported Network Backup and Recovery Clients (Continued)

Vendor Platform	Operating System Name	Version	Backup Client Features Filesystem Clients	Database Clients	Remarks
Siemens Pyramid Nile Series	DC/OSx	1.1	FB, LNK, VxFS		No port control support. No Sybase support.
RM Series	Reliant/ UNIX	5.4x	FB, VxFS, LNK		
Silicon Graphics IP Series	IRIX	5	FB, LNK	None	
		6.0 - 6.2	FB, LNK	None	
		6.4, 6.5	FB, LFS, LNK, XFS	None	IRIX 6.4 requires SGI patch SG0003577.

Table 2-1 Supported Network Backup and Recovery Clients (Continued)

Vendor Platform	Operating System Name	Version	Backup Client Features Filesystem Clients	Database Clients	Remarks
Sun Microsystems Sun 3 (SPARC)	Solaris	2.5	ACL, FB, LNK, VxFS	ORA78, Sybase, Informix	Solaris patch 103187-43 required.
		2.5.1	ACL, FB, LNK, VxFS	ORA78, Sybase, Informix, Backint	Solaris patch 103640-29 required.
		2.6	ACL, FB, LFS, LNK, VxFS	ORA78, Oracle8i, Sybase, Informix, Backint	
		7 (2.7)	ACL, FB, LNK, LFS, VxFS	Oracle8, Oracle8i, Sybase, Informix, Backint	
Intel x86	Solaris	2.6, 7 (2.7)	ACL, FB, LFS, LNK	None	
UNISYS Intel x86	UNIX SVR4	1.4x	FB, LNK, VxFS	None	No support for Unixware.

Databases and Versions Supported

The following terms represent the databases and versions that EDM 4.5.0 supports.

Database	Database Versions
Informix	7.21 - 7.24, 7.3, 9.1x
Sybase	11.0.x, 11.5, 11.9.x
Oracle	7.2, 7.3
ORA78	7.2, 7.3 and 8.0.x
Oracle8	8.0.x
Oracle8i	8.1.x
Backint	EMC Backint for SAP Tools corresponding to SAP R/3 versions 3.1, 4.0, 4.5
RMAN	RMAN Proxy Copy for Oracle 8.1.x
Exchange	NT Exchange 5.x
Lotus Notes	Domino R5 with native client All other versions with St. Bernard's OFM
SQL	NT SQL Server 6.5, 7.0

Acronyms in Tables

Table 2-1, Table 2-3, and Table 2-4 use the following acronyms.

Acronym	Definition
ACL	Access Control List support: client supports backup and recovery of ACLs. See the manufacturer documentation for information on listing and setting ACLs.
ADV	Compaq/DEC Advanced Filesystem support
EFS	Enhanced Filesystem support
FB	EDM File Browser support
FS	Filesystem
JFS	Journaling Filesystem support
LFS	large File Support (seeTable 2-3 for limits)
LNK	EDM Transfer Protocol, also called EDM-Link, a replacement for remote shell support (rsh)
RAW	Raw Filesystem
STD	Standard-speed client
VxFS	VERITAS File System support, up to and including VxFS 3.3.2. Backup performance may be slightly lower on VERITAS filesystems.
VxVm	VERITAS Volume Manager support, up to and including VxVm 3.0.3
XFS	SGI Extended Filesystem

Clients No Longer Supported

EDM 4.5.0 discontinues support for the following client operating systems:

- Compaq/DEC Alpha UNIX 3.2
- IBM AIX 4.1.5
- Sequent DYNIX/ptx 4.1.x, 4.2.1, 4.2.2
- Sun Solaris Intel x86 2.5, 2.5.1
- SunOS 4.1.4
- Windows NT 3.5.1 (all platforms)

Customers who use these older operating systems are urged to upgrade to newer versions.

Support for Epoch Backup and Restore to End in EDM 4.6

EDM 4.5.0 is the last software release to support the original Epoch backup and restore product, which is in /usr/epoch/bin/backup and /usr/epoch/bin/recover.

Limitations on File Size for Network Backups

All UNIX clients, at a minimum, support the backup and restore of files up to 2 GB minus 1 block of the system's native disk block size.

Most EDM clients support the backup and restore of larger files. These are designated with Large File Support (LFS) on page 2-3. However, there are size limits which vary by client. See Table 2-2 for the actual size limits for LFS.

Table 2-2 also shows the limitations on the size of a raw partition that can be backed up and restored.

Table 2-2 Size Limits for Certain Clients

Platform and OS Release	Large File Support	Raw Partition
DEC UNIX ≥ 4.0	1 TB minus 1 block of 512 bytes	1 TB minus 1 block of 512 bytes
HP-UX 10.10	see note[1]	4 GB minus 1 block of 1024
HP-UX ≥ 10.20	1 TB minus 1 block of 1024	1 TB minus 1 block of 1024
IBM AIX ≥ 4.2	64 GB minus 1 block of 512	64 GB minus 1 block of 512
Pyramid Nile DC/OSx ≥ 1.1	see note[1]	4 GB minus 1 block of 512
Sequent DYNIX/ptx ≥ 4.2.3	1 TB minus 1 block of 512[2]	1 TB minus 2 blocks of 512[2]
SGI ≤ 6.2	see note[1]	1 TB minus 2 blocks of 512
SGI ≥ 6.4	1 TB minus 1 block of 512	1 TB minus 2 blocks of 512
Sun Solaris < 2.6	see note[1]	1 TB minus 2 blocks of 512
Sun Solaris ≥ 2.6	1 TB minus 1 block of 512	1 TB minus 2 blocks of 512
Sun Solaris 2.6 Local Client	see note[1]	1 TB minus 2 blocks of 512
Other UNIX clients	2 GB minus 1 block of native block size	2 GB minus 1 block of native block size
NetWare	4 GB	NA
OS/2	4 GB	NA
OpenVMS	Up to OpenVMS maximum size	NA
Windows NT 4.0	8,388 TB[3]	NA

1. 2 GB minus 1 block of the system's native disk block size for all undesignated UNIX clients.
2. These limits apply only if the special binaries named in the section, "Large File Support on Sequent DYNIX 4.2.1 Clients" on page 2-12 are installed.
3. 1 TB = 1024 GB

SGI IRIX 6.4 Clients

For SGI IRIX 6.4 clients running on IP27 or IP30 processors, a mandatory patch is required for the proper operation of EDM client software.

The mandatory patch is SG0003577. Contact SGI Customer Support for patch instructions and details.

Large File Support on Sequent DYNIX 4.2.1 Clients

Large File Support is available on Sequent DYNIX/ptx clients. However, this support is available only via a special, standard speed client binary.

When you install one of these clients, two binaries "findxcpio" and "findxcpio_lfs" are placed in the /usr/epoch/EB/CLIENT_HOME/*clientname*/bin directory.

If you want to enable Large File Support, save findxcpio to findxcpio.mover and copy findxcpio_lfs to findxcpio. Then do your backups.

This is necessary only if you want to back up files that are greater than 2 GB. The backups are done in the standard-speed client mode.

Supported Clients for EDM Symmetrix Path Backups

EDM Symmetrix Path enables EDM to back up its clients through direct SCSI connections to a Symmetrix rather than using a local area network. Symmetrix Path supports multiple-Symmetrix environments This change introduces incompatibilities with versions of Symmetrix Path earlier than 4.3.1. When you upgrade the EDM server to 4.5.0, you must also update all of the EDM clients that use Symmetrix Path to the versions of client software that released in conjunction with EDM 4.3.1 or EDM 4.5.0. See the *EDM Symmetrix Path User Guide* (P/N 300-113-007-01) for more information.

Table 2-3 lists platforms and clients that EDM supports. *See the section, "Acronyms in Tables" on page 2-9, for explanations of the Database Backup acronyms.*

Table 2-3 Supported EDM Symmetrix Path Backup Clients

Vendor	Platform	Operating System		Client Features[1]
		Name	Version	Database Backup
Microsoft	Intel x86	Windows NT	4.0	SQL Server 6.5, 7.0, Oracle78, Backint, Lotus Notes, CC:Mail, Exchange
Hewlett-Packard	9000 All classes	HP-UX	10.20, 11.00	ORA78, Oracle 8i (for 11.00 only), Backint, Sybase, Informix
IBM	RS/6000, SP2	AIX	4.2.x, 4.3.x	ORA78, Oracle 8i, Backint, Sybase, Informix
Novell	Intel x86	Netware	4.10, 4.11, 4.2, 5.0, 5.1	No SFTIII support.
Sun Microsystems	Sun-4 (SPARC)	Solaris	2.5.1, 2.6	ORA78, Oracle 8i (for 2.6 only), Backint, Sybase, Informix

1. Filesystem backup supported. Remarks in Table 2-1 apply to Symmetrix Path.

Supported Clients for EDM Symmetrix Connect

EDM Symmetrix Connect operates with server platforms that run vendor-specific operating systems to back up or restore very large UNIX Oracle database clients. It also supports EMC Backint for SAP R/3 and RMAN Proxy Copy for some clients. It uses tape libraries with 8mm Eliant 820 or DLT4000/7000 tape drives, cabled directly to the EDM system.

EDM Symmetrix Connect for Windows NT backs up or restores very large Oracle database clients. It also supports Microsoft Exchange, SQL Server, and filesystem backups. It uses tape libraries with 8mm Eliant 820 or DLT4000/7000 tape drives, cabled directly to the EDM system.

Table 2-4 shows the clients that Symmetrix Connect supports. *See the section, "Acronyms in Tables" on page 2-9, for explanations of the Filesystem Clients and Oracle/UNIX Layout acronyms.*

Table 2-4 **Symmetrix Connect Clients**

Vendor Platform	Operating System	Filesystem Client Features		Database Client Features		Remarks[1]
		Filesystem Backup[2]	Filesystem Clients[3]	Database Clients	PowerPath Version and Oracle/UNIX Layout[3]	
Compaq/DEC Alpha	Tru64 UNIX V4.0x	Yes	UFS, ADV	Oracle 7.3, 8.0.x	PP 1.5, RAW, FS, ADV	ADV restricted to one fileset/domain
Hewlett-Packard HP 9000 All Classes	HP-UX 10.10, 10.20	10.20 only	HFS, JFS/VxFS	Oracle 7.2.x, 7.3.x, 8.0.x Backint 3.1, 4.0 (10.20 only)	PP 1.2, 1.3 PP 1.5 for 10.20 only RAW, FS	
	HP-UX 11 (32- and 64-bit versions)	Yes	HFS, JFS/VxFS	Oracle 7.2.x, 7.3.x, 8.0.x, Oracle8i Backint 3.1, 4.0 RMAN	PP 1.2, 1.3, 1.5 RAW, FS	No Oracle Parallel Server support. RMAN Proxy Copy requires Oracle8i. Oracle Backup Client CD required for Proxy Copy configurations.
IBM RS/6000	AIX 4.2.x, 4.3.x	Yes	JFS	Oracle 7.2.x, 7.3.x, 8.0.x. Oracle8i Backint 3.1, 4.0 RMAN	PP 1.1, 1.2, 1.3, 1.5 RAW, FS	PowerPath 1.3 or greater required for no-mirror configurations. RMAN Proxy Copy requires Oracle8i. Oracle Backup Client CD required for Proxy Copy configurations.
Microsoft Intel x86	Windows NT 4.0	Yes	NTFS	Oracle 7.3.x, 8.0.x, Exchange5.5, SQL Server 6.5, 7.0	PP 1.3, 1.5 N/A	No support for RMAN Proxy Copy.

Vendor Platform	Operating System	Filesystem Client Features		Database Client Features		Remarks[1]
		Filesystem Backup[2]	Filesystem Clients[3]	Database Clients	PowerPath Version and Oracle/UNIX Layout[3]	
Sequent Symmetry or NUMA-Q Intel x86s	Dynix/ptx 4.4.x	Yes	UFS, EFS	Oracle 7.3.3 minimum, 8.0.x, 8.1.x	No PP RAW, FS	
Sun Microsystems Sun 4 (SPARC)	Solaris 2.5	No	UFS, VxFS 2.3.x	Oracle 7.2.x, 7.3.x, 8.0.x	No PP UFS, VxFM 2.2, 2.3 or none VxFS 2.3.x	Version 2.5 requires Solaris patch 103187-43. Version 2.5.1 requires Solaris patch 103640-29. For Veritas configurations, the Veritas version must be the same on the EDM and client. No Oracle Parallel Server support. RMAN Proxy Copy requires Oracle8i.
	Solaris 2.5.1, 2.6	Yes	UFS, VxFS ≤ 3.3.2	Oracle 7.2.x, 7.3.x, 8.0.x Oracle8i (for 2.6 only) Backint 3.1, 4.0	PP 1.1, 1.2, 1.3, 1.5 UFS, VxFM ≤ 3.0.1 VxFS ≤ 3.3.2 or none	
	Solaris 7 (2.7)	Yes	UFS VxFS 3.3.2	Oracle 7.2.x, 7.3.x, 8.0.x Oracle8i	PP 1.3, 1.5 UFS, VxFM 3.0.1 VxFS 3.3.2	

1. All platforms use a native volume manager, except Sun, which uses Veritas (up to and including VxVm 3.0.1).
2. Refers to support of filesystem "all or nothing" backup and restore.
3. See list of acronyms on page 2-9.

EDM/Symmetrix Interoperability

Tables 2-6 and 2-7 provide information about EDM and Symmetrix interoperability.

Table 2-5 Symmetrix/EDM Symmetrix Connect Interoperability

Symmetrix Features	EDM Symmetrix Connect Clients - Software Versions Validated					
	HP HP-UX	Sun Solaris	IBM AIX	Compaq/DEC Tru64 UNIX	Sequent/ DYNIX/ptx	Windows NT
Solutions Enabler 4.0.x (4.0.111 minimum) **(includes SYMAPI)**	**Required**	**Required**	**Required**	**Required**	**Required**	**Required**
PowerPath 1.1, 1.2, 1.3, 1.5	1.2, 1.3, 1.5 supported	*See Table 2-4*	All versions supported [1]	1.5 supported	n/a	1.3 and 1.5 supported
Symmetrix Microcode 5264, 5265	5264, 5265 supported	5264, 5265 supported	5264, 5265 supported	5265 supported	5265 supported	5265 supported
Connectrix 1.3	n/a	Supported	n/a	n/a	n/a	Supported
Volume Logix 2.1	n/a	Supported	n/a	n/a	n/a	Supported

1. For no mirror backups on AIX clients, EDM Symmetrix Connect requires PowerPath 1.3 or 1.5 on the client.

Table 2-6 Symmetrix/EDM Symmetrix Path Interoperability

Symmetrix Features	EDM Symmetrix Path Clients - Software Versions Validated				
	HP HP-UX	Sun Solaris	IBM AIX	Windows NT	Novell Netware
PowerPath 1.1, 1.2, 1.3, 1.5	All versions supported	**Required for Oracle 8.x** (All versions supported)	**Required** (All versions supported)	1.3 and 1.5 supported	n/a
Symmetrix Microcode 5264, 5265	5264, 5265 supported	5264, 5265 supported	5264, 5265 supported	5264, 5265 supported	5264, 5265 supported
Symmetrix Sockets Library 1.4.9.a/b	Supported	Supported	Supported	Supported	Supported
Connectrix 1.3	n/a	Supported	n/a	Supported	n/a
Volume Logix 2.1	n/a	Supported	n/a	Supported	n/a

VxFS Requirement for HSM

To use HSM, your EDM server and your EDM Migration clients must be running VxFS 3.3.2. It is recommended that you apply the Veritas patch for Incident 32226 to fix a potential kernel deadlocking issue under heavy HSM use. Contact Veritas Customer Service for assistance.

PowerPath

- You do not need PowerPath for network backups.
- Symmetrix Connect and Symmetrix Path support both PowerPath and PowerPath Lite.
- PowerPath can be installed on the EDM server even if no client has PowerPath installed on it.
- PowerPath supports Fast/Wide Differential SCSI and Ultra SCSI interfaces.

PowerPath and Symmetrix Connect

You do not need PowerPath for Symmetrix Connect backups, except as noted below. If you use PowerPath with Symmetrix Connect:

- PowerPath must be installed on the EDM server if the backup client is a Solaris client, and any VERITAS LVM volumes on the client are on PowerPath virtual devices using the "safe" or "EMCpower" naming conventions as described in the PowerPath manual
- there is no requirement to match PowerPath versions on the server and the client.
- a mixed configuration of PowerPath and non-PowerPath devices is permitted.
- PowerPath supports all EDM Symmetrix Connect configurations (mirrored and non-mirrored).

PowerPath and Symmetrix Path

Symmetrix Path requires that PowerPath or PowerPath Lite be installed on:

- AIX clients
- Solaris Oracle8 clients running Oracle Backup Client

The EDM distribution CD includes PowerPath Lite for these clients, but you can use any supported version (see Table 2-6). The distribution CD includes PowerPath 1.5.0 for Sun and IBM.

Connectrix and Volume Logix

EDM 4.5.0 supports EMC Connectrix and Volume Logix.

Connectrix is a fibre channel switch that allows single connections between multiple hosts and multiple Symmetrix systems.

The Volume Logix utility enables you to allocate storage among the host servers efficiently, and control access to protect integrity of data.

Oracle Parallel Server Support

Table 2-7 describes Oracle Parallel Server (OPS) cluster support.

Table 2-7 Oracle Parallel Server Support for EDM

		Oracle7.2.x and 7.3.x	Oracle8.0.x	Oracle8.1.5
Platform	**Data Path**	**Cluster Support**	**Cluster Support**	
UNIX	Network	Yes	Yes	Yes
	Symmetrix Path	Yes	Yes	Yes
	Symmetrix Connect	Not supported	Not supported	Not supported

Oracle Parallel Server allows access to a single database by users on multiple machines with improved speed and capacity to process larger workloads. Multiple instances share the same database.

Note: Windows NT and Microsoft Clusters (MSCS) are not supported.

3 Supported Media and Library Units

This chapter contains a table of supported media, and tape and optical library units.

Note: Only automated library units are supported; standalone drives (tape or optical) are not.

Note: 5.2 GB (2048 byte/sector) optical media is not supported.

Supported Media for EMC Supplied Tape Library Units

For EMC supplied tape library units, EMC recommends DLTtape™ IV half-inch data cartridges from the following vendors only:

- Fujifilm
- Maxell
- Quantum
- EMC

DLT, DLTtape, and the DLT logo are trademarks of Quantum Corporation.

Supported Tape and Optical Library Units

Refer to the following table for supported tape and optical library units in EDM 4.5.0.

Manufacturer & Model	No. of Slots	Load Port	No. Drives	Drive Type	Native Capacity (TB)	No. SCSI Cards
DLT (Digital Linear Tape) Library Units						
ADIC Scalar 218	17	1-cartridge	2	DLT7000	0.595	1
ADIC Scalar 1000	158 to 788	12-cartridge	48[3]	DLT7000	27.0	24
	158 - 788	12-cartridge	16	IBM Magstar 3590	7.8	8
ATL 520 Series: ACL 2/52 (4/52)	48	4-cartridge	up to 4	DLT4000 DLT7000	1.82	up to 2
ATL 2640 Series: ACL 3/176 (6/176)	176	In/Out	up to 6	DLT4000 DLT7000	6.16	up to 3
ACL 3/264	176	In/Out	up to 6	DLT4000 DLT7000	9.24	up to 3
ACL 9/88	88	In/Out	9	DLT4000 DLT7000	3.08	5
ATL 7100 Series ACL 7100	100	4-cartridge	7	DLT4000 DLT7000	3.5	4
ATL P1000	16 or 30	1-cartridge	4	DLT4000 DLT7000	1.05	2
ATL P3000	326	12-cartridge	16	DLT7000	11.4	8
Exabyte EXB-18D	8 (1 slot for cleaner)	None	1	DLT7000	0.28	1
StorageTek WolfCreek 9360	504 - 949	20- or 30-cartridge	2	IBM 3480/3490/3490E	0.76	1

Manufacturer & Model	No. of Slots	Load Port	No. Drives	Drive Type	Native Capacity (TB)	No. SCSI Cards
DLT (Digital Linear Tape) Library Units (continued)						
StorageTek TimberWolf 9710	252 or 588	14-cartridge	10	STK 9840	11.8	5
	252 or 588	14-cartridge	10	DLT4000	2.0	5
	252 or 588	14-cartridge	10	DLT7000	3.5	5
StorageTek TimberWolf 9714	up to 100	1-cartridge	6	DLT4000 DLT 7000	2.0 3.5	5
StorageTek TimberWolf 9740	326 or 494	14-cartridge	4	STK 9490	395.2 GB	2
	326 or 494	14-cartridge	10	STK 9840	9.9	5
	326 or 494	14-cartridge	10	DLT 4000	9.8	5
	326 or 494	14-cartridge	10	DLT 7000	17.3	5
DTF (Digital Tape Format) Library Unit						
Sony PetaSite DMS-8400	15 - 180 (per module)	8-cartridge	4	GY-2120	0.6 - 7.5	2
HTTC (Half-inch Tape Cartridge) Library Units						
StorageTek ACS 44x0	6,000	21- or 40-cartridge	4 per panel	STK4480/4490	200 MB	2 per panel
	6,000	21- or 40-cartridge	4 per panel	STK TimberLine 9490	up to 800 MB	2 per panel
	6,000	21- or 40-cartridge	4 per panel	STK 9840	720 TB	2 per panel
	6,000	21- or 40-cartridge	4 per panel	IBM Magstar 3590	5GB	2 per panel

Manufacturer & Model	No. of Slots	Load Port	No. Drives	Drive Type	Native Capacity (TB)	No. SCSI Cards
StorageTek PowderHorn 9310	6,000	40-cartridge	4 per panel	STK 4480/4490	200 MB	2 per panel
	6,000	40-cartridge	4 per panel	STK 9840	up to 800 MB	2 per panel
	6,000	40-cartridge	4 per panel	STK TimberLine 9490	720 TB	2 per panel
	6,000	40-cartridge	4 per panel	IBM Magstar 3590	5 GB	2 per panel

Manufacturer & Model	No. of Slots	Load Port	No. Drives	Drive Type	Native Capacity (TB)	Disk
Optical Library Units						
Hewlett-Packard SureStore 40st	32	single disk	2	2x	41.6	1.3 GB
80st	64	single disk	2	2x	83.2	1.3 GB
100st	76	single disk	4	2x	98.8	1.3 GB
165st	128	single disk	4	2x	166.4	1.3 GB
300st	238	single disk	6	2x	309.4	1.3 GB
Hewlett-Packard SureStore 40fx	16	single disk	6	4x	41.6	2.6 GB
80fx	32	single disk	2	4x	83.2	2.6 GB
160fx	64	single disk	2	4x	166.4	2.6 GB
200fx	76	single disk	2	4x	197.0	2.6 GB
330fx	128	single disk	6	4x	332.0	2.6 GB
600fx	238	single disk	12	4x	618.0	2.6 GB
Hewlett-Packard SureStore 80ex	16	single disk	1 or 2	4x	83.2	5.2 GB
125ex	24	single disk	1 or 2	4x	124.8	2.6, 5.2 GB
160ex	32	single disk	2	4x	166.4	5.2 GB
320ex	64	single disk	4	4x	332.8	5.2 GB
400ex	76	single disk	2	4x	395.2	5.2 GB
660ex	128	single disk	4 or 6	8x	665.6	5.2 GB

a. EDM supports a maximum of 20 DLT7000 drives for the ADIC Scalar 1000 library unit.

4 Software Limitations and Problems

This chapter describes known software problems, limitations, workarounds, and enhancements. It also includes changes to the product which are not yet described in user documentation. Also see client release notes for known problems.

If you need technical assistance, contact the EMC support hot line at:

1 800 SVC-4EMC (1 800 782-4362)

If you are located outside the United States, contact the nearest EMC office for assistance.

This chapter includes the following sections:

- System File Issues
- Software Installation and Updates
- Volume Management
- System Monitoring Support
- Backup and Restore
- Database Backup
- EDM Symmetrix Path
- EDM Symmetrix Connect

- Network Clients and Client Installation and Update
- Windows NT Filesystem and Applications Backup
- Hierarchical Storage Management
- Graphical User Interface

Most problems are identified by an incident code number that EMC uses for tracking software problems and fixes.

System File Issues

Some software problems involve semaphore settings in the client's /etc/system file (the OS Kernel configuration file):

- For EDM Symmetrix Path clients, problem "UNIX Client System File Settings (#22282)" on page 4-31 recommends minimum semaphore settings.
- For high-speed network backup clients:
  - The limitation "Maximum Number of Concurrent Backups for UNIX Clients" on page 4-17 recommends minimum semaphore settings for concurrent backups.
  - The problem "Increase the Maximum Number of Semaphores for UNIX Clients" on page 4-19 documents the error message indicating the need for higher semaphore settings.

Software Installation and Updates

This section describes known software limitations and problems that apply to installing and updating EDM software.

WARNING: Do not add a Solaris patch to the EDM without the concurrence of EMC Customer Service.Problems

Initial Install Failing (#28122)

An initial installation on a Solaris machine that has been upgraded from 2.5.1 to 2.6 may fail because a Sun package does not install properly. The workaround is to remove a lock file as follows and proceed with installation.

```
# cd /var/sadm/pkg/SUNWdoc
# ls
   !I-Lock! install pkginfo save
# rm *Lock*
```

SYMAPI Doesn't Recognize PowerPath Devices (#26973)

If you cannot run a proxy copy LBCV backup, for example, because the SYMAPI doesn't recognize devices as PowerPath devices, have service personnel check the installed version of the SYMAPI. The server devices in the ddtab may not have been converted to their PowerPath equivalents, and the SYMAPI database might not reflect the correct PowerPath information.

EMC Customer Service understands the correct version of the SYMAPI Enabler Kit to install on the server to correct this problem.

Install of edm Fails Intermittently (#29881)

The install of edm fails intermittently with ./bin/_epadd: test: argument expected. The workaround is to rerun the installation.

Core Files of Running Daemons that Fail After Upgrade to EDM 4.5.0 are Lost (#31294)

If, after updating to EDM 4.5.0, any daemons that were running during the update fail, the core files for those failed daemons are lost. Collection of core files will resume for any failed daemons when they are restarted following the EDM update.

These core files are located in the directory /usr/epoch/etc/coredir, which resides on the same filesystem that contains the backup catalogs (/usr/epoch/EB/catalogs).

BAM Unresponsive (#33604)

When you perform a fresh install of EDM software and then configure some work items, the BAM daemon stops responding, with the error BAM_ERROR03 (daemon is not running). This happens when you enable the Backup Activity Wizard. If at this point you do the following on EDM:

```
# ps -ef | grep bamd
```

you see two instance of the bamd process, in a parent-child relationship. Running the following command shows that all of the 64 file descriptors with the BAM daemon process are open, and most of them are connected to eb_cfg.lock:

```
# lsof -p <pid of bamd>
```

The workaround is to restart the BAM daemon by using:

```
# /usr/epoch/bin/edmproc -restart bam
```

Volume Management

This section describes limitations, known software problems, and workarounds that apply to volume management.

Limitations

The following paragraphs describe current software limitations for volume management.

If Updating with Active Media Duplication Turned On (from EDM Versions Prior to 4.0.0)

When updating software with active rotations/media sets for which media duplication is enabled, duplicate media that was created prior to EDM 4.0 will have the same expiration date as its original volume; you cannot modify the duplicate's expiration date to be different than the original's.

However, for all new rotations that are created with EDM 4.0 and later, duplicate media can be expired before the original media.

Scheduling Policy When Backup and Restore Contend for the Same Volume (#31020)

Because tape positioning for backup and restore processes requires a significant amount of time, the following scheduling policy occurs when backup and restore contend for the same volume.

When a second request is made for a volume that is already in use, "round robin" scheduling causes swapping between the two contending applications every 15 minutes. This round robin approach continues while contention exists over the same volume.

NIS+ Requires Backward Compatibility Mode

Volume management hangs if you use NIS+ instead of NIS.

The workaround is to boot NIS+ in "backward compatibility mode." To do this, you must modify the /etc/rc2.d/S71rpc startup script to include the YP emulation flag as follows:

1. Add the definition of EMULYP="-Y" (if not present).
2. Add the $EMULYP flag when calling rpc.nisd (if not present).

The resulting /etc/rc2.d/S71rpc startup script should then look similar to the following:

```
# Note add the option to rpc.nisd if you wish to emulate the NIS (YP)
# service.
#
     EMULYP="-Y"
#
# We always start the NIS+ Password Update Daemon. If it finds the NIS+
# server is not a Master it will just exit.  It also determines if the
# server is running in NIS (YP) compat mode and automatically registers
# a yppasswdd so NIS (YP) clients can change their passwords.
#
if [ -d /var/nis/data -o -d /var/nis/$hostname ]; then
/usr/sbin/rpc.nisd $EMULYP
echo " rpc.nisd \c"
/usr/sbin/rpc.nispasswdd
fi
```

Problems

The following paragraphs describe volume management problems (which are listed by incident code number), and associated workarounds for this release.

A Lower Priority Process May Get Control Over Two-Sided Media Over a Higher Priority Process (#17737)

If two processes are contending over one piece of EO or WORM media, the lower priority process may obtain control over that media. If necessary, cancel that process so the higher priority process can use the media instead.

If Updating from EDM 2.*x* to 4.*x* and Using Manual Media Duplication, eb.cfg Corrupted by eb_server_config (#17910)

If the manual duplication option (of the Media Duplication feature) is activated for EDM 2.x.x and you update to EDM 4.x.x, the eb.cfg file does not parse properly.

The workaround is to remove manually the line or lines that contain the words "manual duplication," and then reconfigure media duplication through the EDM GUI. (Refer to EDM online help for more information.)

> **CAUTION: Manually editing the eb.cfg file risks corrupting the backup configuration. Only EMC Customer Service personnel should edit the eb.cfg file.**

The workaround is for you to move the redo log files to another directory, and run the backup again.

Cancel Eject Operations (#18018)

You cannot cancel a volume eject operation if the eject process has already started.

If you try to cancel an eject operation for a single volume in the Library Unit Manager window of the EDM GUI and the process already started, the cancel is ignored and the volume is ejected.

If the request to cancel an eject is received *before* processing begins, the cancel succeeds and the volume is not ejected from the library unit. If several volumes are selected for ejection, some of the ejects may cancel successfully.

StorageTek Timberline Drives Report an Error During Inventory and Labeling (#22404)

During an inventory or "Write Label" on any TLU that uses STK 9490 drives, a media error occurs (as shown below). However, media can still be labeled, and backup and restore processes complete successfully.

Ignore the error message and continue. The error does not affect writing to or reading from media.

```
Feb 13 11:23:48 edm unix: WARNING:
/iommu@f,e0000000/sbus@f,e0001000/QLGC,isp@1,10000/st@1,0 (st29):

Feb 13 11:23:48 edm unix:  Error for Command: space Error Level: Fatal
Feb 13 11:23:48 edm unix:  Requested Block: 0       Error Block: 0
Feb 13 11:23:48 edm unix:  Vendor: STK              Serial Number:
Feb 13 11:23:48 edm unix:  Sense Key: Media Error
Feb 13 11:23:48 edm unix:   ASC: 0x30 (<vendor unique code 0x30>), ASCQ: 0x1, FRU:
```

Unable to Dismount Available Volume from Disabled Drive (#28120)

If a drive is disabled with an available volume in the drive, and the system is unable to dismount the volume from that disabled drive, you should remove the volume from the drive by hand (refer to the hardware documentation or contact EMC Customer Service for assistance), and reinject it into the library unit. This allows the system to again access the volume, and prevents the system from trying and failing to use this volume in a disabled drive. If you are unable to remove this available volume from the drive, remove it from the volume catalog by using the command **evmrmvol -v *<volume ID>***. This prevents the system from attempting to use the volume. When you remove the volume from the drive again, you can reinject it and import the volume to return it to the volume catalog.

Power-cycle Drives After Upgrading Firmware (#28302)

When you upgrade the firmware of any drive, be sure to power-cycle the library unit. Otherwise, the firmware download does not complete.

Robot in StorageTek 9740 Library Unit Is Unable to Determine Media Type Correctly (#30790)

In the StorageTek 9740 library unit, a robot with firmware version 1.10.0 or older has trouble determining the media type; the robot is unable to read the media barcodes correctly. Therefore, the contents of the library unit and, therefore, the information in EDM's volume database are not accurate.

Until the vendor fixes this problem, the workaround is to open and then close the library unit and allow the library unit to scan its slots. From the Library Unit Manager window of the EDM GUI, perform a barcode-only inventory (refer to EDM Online Help for instructions). This ensures that the information in the volume database and the library unit contents are the same.

vmdaemon Cannot Handle Large Number of Concurrent Requests (#31285)

The server vmdaemon cannot handle a large number of concurrent client requests. Command line utilities that may result in multiple long running operations, like evmimport and evmlabel, can flood vmdaemon with requests and cause it to fail.

Hardware Problems May Occur in an ATL P1000 Library Unit if Using a Firmware Version Earlier than 1.21 (#31681)

When running EDM 4.5.0 with an attached ATL P1000 tape library unit, be sure that the LU's firmware version is at least 1.21. Otherwise, hardware problems (specifically, injecting and ejecting volumes through the load port) may result.

edmlm Takes 30 Seconds To Get Robot Information (#31891)

For library units with inlets, it may take some time (upwards of 30 seconds) for the Library Unit Manager window of the EDM GUI to display library unit information in the Information tab. This is expected behavior.

Data Written to a Volume May be Inaccurate in the EDM GUI (#32230)

In the Library Unit Manager window, the "Data Written" value in the media list displays the actual amount of data that a volume contains. However, this data may have an incorrect value.

Run ebexpire Later Than One Minute After a Backup Restore Operation Completes (#32971)

Due to code that alleviates a scheduling conflict between backup and media duplication operations, an ebexpire operation on a given trail that is attempted within one minute of a backup or restore operation on that trail will fail. This failure leaves the trail unexpired and causes ebreport to issue an error message similar to the following:

```
Feb 13 17:30:45 pop ebreport[19989]: SB: logging:
#2019 01/13/00 17:30:45 [19989:ebreport,
ec=0x6060002: (EpochBackup,Report) No such file or
directory] DATA LOSS ERROR! Current volume
9FE1F90E065C2E7F for template "ebfs_br_1" trail
"ebfs_tr_1_DLT" ebfs system id

AD81F88F.30C2295C.00000200.150615D8 has been
deleted from the volume database. This will prevent
recovery of backups which were written to this
volume."
```

Since the intention was to expire the trail and reuse the volumes, this error is benign.

The workaround is to run ebexpire later than one minute after a backup or restore operation on a given trail completes.

Eject After Labeling Option Does Not Eject a Volume to Offline for StorageTek Library Units Using Firmware Version 1.10.0 (#32552, #33507)

In the Label tab of the Library Unit Manager window, the Eject After Labeling option does not work as intended for all StorageTek library units that use firmware version 1.10.0.

Until the vendor fixes this problem, do the following:

1. Label a volume by using the Write Label(s) button in the Label tab.
2. Dismount the volume by using the Dismount button of the Utilities tab.
3. Eject the volume from the library unit.

(Refer to EDM Online Help for more information.)

A Backup Operation is Preempted by a Write Label Process (#33132)

If a backup is in progress and no drives are available when a Write Label request is issued, contention results between the backup and Write Label processes. The Write Label operation can cause preemption of the backup.

When the Write Label operation completes and the drive becomes available, the backup then continues in that drive.

To avoid this problem, schedule a Write Label operation through the Library Unit Manager window of the EDM GUI only when a drive is available. (Refer to the EDM Online Help for more information.)

More Blank Media Than Expected (#33814)

In very, very rare cases, a transient hardware error during the read of EDM label data from a labeled tape may cause the label read to think the volume is blank. If you have more blank media than expected, even by one volume, do a barcode/label inventory of the blank media. A volume that was accidentally identified as blank because of this transient error will be discovered during the inventory, and the volume information will be corrected.

If you find that you have had one of these transient errors occur, and you reclaim the volume through inventory, contact EMC Customer Service and ask them to investigate the transient error.

GUI May Show Two Volumes with the Same Barcode (#33556)

If, while a volume is mounted in a drive, all slots in the library unit are filled by hand (which is usually possible only if volumes are injected through the front door of the library unit), and if the home slot of the mounted volume is also filled, the GUI may show two volumes with the same barcode as that of the mounted volume. This does not affect operation of the system.

System Monitoring Support

The following paragraphs describes known system monitoring limitations and problems for this release.

Do Not Run rasd from the Command Line

Run **rasd** from its startup script, *not* from the command line. If the error message "NewMIBFromFile (): cannot open /etc/srconf/mgr/snmpinfo.dat," appears, you restarted the rasd daemon from /usr/epoch/lib/sysmon rather than running the system startup scripts. You can correct the problem by using the **edmproc -restart sysmon** command.

Additional Text and email Information

RASD now provides you with much more text and email information with regard to server and client conditions.

Setting Interval Variables (#27799)

Except for client monitoring, RASD interval variables for monitoring queued requests and backup throughput must be multiples of the scan period. Otherwise, you will not get an event on the interval you set, but on the next greater scan period multiple.

For example, if the backup_scan_period equals 300, the problem and fault intervals should be set to multiples of 300 such as 300 or 1800. If you change the fault interval to 1900, the scan of the fault interval occurs at 2100 (or seven times the current scan period). If the scan period changes from 300 to 500 and the problem and fault intervals remain at 300 and 1800 respectively, the scan for the problem interval would occur at 500 and the fault interval at 2000 (or one time and four times the scan period).

Solaris syslogd Occasionally Core Dumps (#30774)

Solaris syslogd occasionally core dumps, directly proportional to the number of times syslogd receives a kill -HUP. EDM typically performs an hourly cron job that calls /usr/epoch/lib/epnewlog. The epnewlog script manages and archives EDM system logs. Part of this script issues a kill -HUP to syslogd. This should eventually be fixed with a Solaris patch. In the meantime, configure system monitoring to "recycle," which runs /etc/init.d/syslog start, as a workaround.

/bin/sh Core Dumps with a SIGBUS (#33351)

The /bin/sh core dumps. It has generally been the shell which runs rasd that dies. This problem also occurs occasionally with eb_install_client.

Backup and Restore

This section describes a software enhancement, limitations, problems, and workarounds that apply to the backup and restore software.

Limitations

The following paragraphs call attention to current software limitations and operating tips for backup and restore.

LOCAL_DATABASE Backups are Always Level 0

The LOCAL_DATABASE work item must always run as a level 0 backup, because disaster recovery requires that it be current.

Even if a different level is specified on the **ebbackup** command line or any level map directive specified for the work item, the level for the LOCAL_DATABASE work item cannot be changed.

Deleting Existing Entries in the crontab File

Adding new entries to the crontab file through the EDM GUI does not replace existing entries for the same activities. You must remove existing entries from crontab manually. After creating new, equivalent entries through the GUI, it is recommended that you delete existing entries by running the command **crontab -e** as root (refer to the **crontab**(1) man page for more information).

Note that the EDM GUI controls pre- and post-commands creation; thus, you do not have direct control over those extensions to the ebbackup command when you are using the GUI. The GUI does not allow you to configure complex or non-standard pre- and post- commands. If you want to use complex or non-standard pre- and post- commands, use the **crontab -e** command.

Backing Up NFS Filesystems

When backing up a UNIX-based client that is not a Sun client, the "do not back up NFS mounted filesystems" directive can cause excessive calls to the **mount** command to determine the directories that are mount points for NFS filesystems. This can degrade both client and backup performance.

Instead, use the "don't cross filesystem boundaries" directive, and explicitly list the client filesystems to back up.

Limitation on Length of Some Names

Template/schedule and work item names cannot be longer than 56 characters.

Configuration Limitation When Backing Up Two Database Servers with Identical Database Name Concurrently

EDM cannot support concurrent backups of two database servers with an identical database name.

Oracle listener work items are based solely on the database name. Therefore, if you have two Oracle instances with the same name on different machines, perform the listener configuration only once. Both instances use the created work items.

If you want the backups to go to different work items (because you want different templates), edit the listener work items manually, and change the name from *oracle_db_name_1* to *oracle_db_name_client_name_1*.

This change restricts the work item to be used only by a specific client, which enables you to create another configuration for a database with the same name on a different machine.

Maximum Number of Concurrent Backups for UNIX Clients

For high-speed clients, the maximum number of concurrent backups allowed per client is dependent on the client's kernel configuration.

If you configure a client for more concurrent backups than allowed by the kernel, a failure to backup the work item occurs. The server's /usr/epoch/EB/log/backups.log reports a client failure while processing a work item.

If this happens, contact EMC Customer Service for assistance.

> **Note:** You configure the maximum number of concurrent backups by using the Backup Configuration window. See EDM Online Help for details.

Notes for Customer Service Only:

To override this limitation, increase the value of the client's seminfo_semmni and seminfo_semmnu kernel parameters and reboot the system.

The NCR client also requires a rebuild of the kernel (**boot -r**).

For example, the default values for a Solaris 2.5 or 2.5.1 client allow a maximum of 10 backups to run concurrently, as specified by the following lines in the /etc/system file:

```
set semsys:seminfo_semmni=10
set semsys:seminfo_semmnu=30
```

To increase the number of concurrent backups to 20, for example, change the lines as follows:

```
set semsys:seminfo_semmni=20
set semsys:seminfo_semmnu=40
```

This sets the maximum number of identifiers for semaphores to 20, allowing you to run up to 20 concurrent backups on that client. The value of seminfo_semmnu must be two times the value of seminfo_semmni. (For more information about these parameters, refer to the client's operating system documentation.)

Table 4-1 summarizes the maximum allowable concurrent backups for some high-speed clients, *based on the client's* **default** *configuration*. (That is why the numbers do *not* follow the "two times" rule that is stated in the previous paragraph.) Table 4-1 also includes the name of the file or utility that you use to modify the kernel. Refer to the client operating system documentation for additional information.

Table 4-1 Maximum Concurrent Backups

Client OS	Default Configuration	Max Concurrent Backups	File or Utility to Modify Kernel
Solaris 2.5.*x*	semsys:seminfo_semmni=10 semsys:seminfo_semmnu=30	10	/etc/system
NCR SVR4 MP-RAS 3.0	semsys:seminfo_semmni=25 semsys:seminfo_semmnu=30	15	/etc/conf/cf.d/stune /etc/conf/cf.d/mtune[1]
HP-UX Version 10.20	semsys:seminfo_semmni=64 semsys:seminfo_semmnu=30	15	SAM utility
IBM AIX	No direct limit		Not required
Sequent DYNIX/ ptx Version 4.2.x	semsys:seminfo_semmni=10 semsys:seminfo_semmnu=30	10	/ptx/ADMIN utility
DEC UNIX Versions 4.0	ipc: semmni=16 proc: max-proc-per-user=64	16	/etc/sysconfigtab file

1. Requires a rebuild of the kernel after modifying the configuration.

For DEC UNIX clients, you also need to increase the maximum number of processes per user to at least 3 times the maximum number of simultaneous backups.

To allow up to 32 simultaneous backups on the client, set the following:

```
sem-mni=32
max-proc-per-user=128
```

Increase the Maximum Number of Semaphores for UNIX Clients

For high-speed network backup clients, higher recommended minimum semaphore settings are required if the following error message appears in the EDM server's backups.log file:

```
debfs:PW_Mutex::PW_Mutex()-semget() failed. Increase
themaximum number of semaphores in the system. "No space
left on device." Error = 28.
```

If you get this message, increase semaphore values on the client system.

Custom Scheduling Shift Lengths

Custom scheduling does not use the weekday or weekend backup shift length directives. If either backup shift length is specified, a warning message appears and the backup shift lengths is cleared. Custom shift lengths can only be specified for Auto Scheduling.

For more information on custom scheduling, refer to Appendix B, "EDM Backup Configuration File" in the *EMC Data Manager Software Reference* manual, specifically the section, "Backup Template Fields, Schedule."

Locked Files Cause Mover Backups to Fail

Locked files cause mover backups to fail and an error message appears in backups.log. The error messages inform you that the file was locked by another process and that a read failure occurred.

Search Function in Restore GUI Cannot Locate Strings with Slash (/)

The search function in the EDM Restore GUI cannot locate a search string that contains the slash (/) character.

CLI Does Not Warn of Offsite Volumes Needed for Restore (#33676)

If any volume that is needed for restore purposes is offsite, the CLI does not warn you that not all volumes are online and available. In the Restore Volume Needed Report, you need to scan the volume status to verify whether all volumes are online before continuing with the restore operation.

An example of this report with offsite volumes follows:

```
Restore Volume Needed Report for work item "abcxyz:/" on Tue Feb 29, 2000 at 14:00:30
Needed Volumes Trail "backup_DLT".
Orig Vol: BDE2DF365D0CC0A4 (AR1381)  Seq #: 353 in TLU: offsite_0 status: Offsite
media: DLT tape
Dup  Vol: 49E2EA75351DD44C (DCI532)  Seq #: 352 in TLU: offsite_0 status: Offsite
media: DLT tape
```

Problems

The following paragraphs describe backup and restore problems listed by incident code number, and associated workarounds for this release.

Not Able to Restore While Backing Up the Same Work Item (#16912)

If you run a backup for a work item and at the same time restore a previous backup of the same work item, the restore fails with strange error messages. (Backup runs fine.) Avoid restores of work items that are currently being backed up.

```
03/06/00 13:30:53 [ 17963:xcpiogen, ec=0x30a800c: (EBFS,Directory
Database)Epoch BitFile Directory Not Found] while getting attributes in
bitfile directory "FFFFFFFFFFFFFFFFFFFFFFFF7FFFFFFFFF" for bitfile
"8ACD78BAA1D9876500CE6900AC0A8FEC".
```

TimeFinder Backup Quits Due to debfs Failure (#17997)

Oracle redo logs, created during backups are especially critical to performing a point-in-time or database recovery. The actual redo logs are never backed up, only archived redo logs during a Symmetrix Connect backup - optional if an offline backup. The archived redo log directory must never contain actual redo logs. If this problem occurs, the following error message appears in backups.log:

```
Client failure while processing workitem
<work item name>
Client error is "debfs error".
```

The workaround is for you to move the redo log files to another directory, and run the backup again.

ebbackup -halt Not Effective for Filesystems if Database Backups Also Running (#25551)

If you are running filesystem and database backups at the same time, **ebbackup -halt** might not work for filesystems, because the eblistend process runs an ebbackup -R, which re-runs the filesystem backups you wanted to halt.

The **ebbackup -halt** and **ebbackup -HALT** commands are not supported for canceling database backups (see "Halting Backups and Restores (#23776)" on page 4-27). But in this case, if you try to use it for filesystem backups while database backups are running, it doesn't work for halting the filesystems backups.

Restores for AIX Clients Running a Logical Volume Manager Overwrite LCVB (#25759)

If the AIX client is running a logical volume manager, restores overwrite the AIX logical volume control block (LVCB) with old LVCB data. This does not cause a problem if this data does not change. Even if the characteristics of a logical volume -- or the characteristics of a filesystem on that volume -- change between the time of a backup and a restore, it still does not cause a problem unless you try to import the LV to another system. The running LVM does not pay any attention to this obsolete LVCB.

However, it is a good idea to update the LVCB with the current volume and filesystem parameters in case this volume is ever imported onto another host because the LVCB contents are used to transfer information about this volume and filesystem to the new host.

> **Note:** This applies to restores for all of the following EDM features: EDM Symmetrix Connect (for raw LVM restore, rawfs restore), EDM Symmetrix Path (for EMC Backint and filesystems), for network backup and restore of filesystems, and for network restore of database backups taken with the former "offline database backup" function (Oracle, Sybase, Informix) The only EDM features NOT directly causing the problem are database restore for Oracle, Sybase, or Informix (over either EDM Symmetrix Path or network, but only because DBMS vendor programs handle the applicable function (and they perhaps could cause the same problem).

To update the LVCB with the current volume and filesystem parameters, do the following:

1. List current volume/filesystem attributes from LVM for the volume that has been restored (these are the attributes you want to keep): **lslv** *volname*
2. List contents of the LVCB (these are the attributes that might be obsolete): **getlvcb -AT** *volname*
3. Update any mismatched volume attributes in the LVCB (see man or docs for options): **chlv** *options volname*
4. Update mismatching filesystem settings in the LVCB (see man or docs for options): **chfs** *options filesystem*

Note that *options* in **chlv** and **chfs** are identical to the running values that **lslv** displays, but if they differ from the old LVCB version (as seen by **getlvcb**), updating the same option values forces them to be written to the LVCB.

Simultaneous Editing of the root crontab Manually and Through the EDM GUI Can Result in Data Loss (#27594)

If you simultaneously edit the root crontab file manually and from the EDM GUI, data loss can result. When you edit this file, be careful that another user is not also saving changes to the file at the same time. The GUI does issue a message that informs you when someone else is modifying cron manually. For more information about the crontab file, refer to the *EMC Data Manager Software Reference*.

findxcpio Process Sometimes Remains (#25407, #23446)

Sometimes **findxcpio** processes do not get cleaned up on the client system when you issue a **halt** command in the middle of a backup operation. These processes can consume CPU cycles on the client system.

To remove this process, use the following commands on the backup client machine. Use this procedure ONLY after all other backups have finished (successfully or unsuccessfully) on that client.

1. Obtain the pid of the findxcpio process:

```
# ps -aef | grep findxcpio
```

2. Terminate the findxcpio process:

```
# kill -9 pid
```

Backup Activity Monitor Does Not Indicate Bad Files for OpenVMS Backups (#28267)

If a bad file is encountered during an OpenVMS backup, the EDM server is notified and the backups.log file is updated appropriately. However, the Backup Activity Monitor is not properly notified and does not indicate bad files from OpenVMS backups.

The number of bad or skipped files is summarized in the client-side log file EPOCHBACKUP.LOG.

EDM May Configure a Work Item for a CD (#28404)

If your Solaris 2.6 client has a CD mounted in the drive at the time of client configuration, the EDM may configure a work item for the CD, and the EDM then attempts to back up the CD. This can occur when the Solaris 2.6 client is not at the recommended Solaris patch level, and can occur whether the configuration is done from the EDM GUI or the CLI. The workaround is to use the GUI to delete the work item.

ebrecover Messages Have Changed (#29829)

ebrecover messages are no longer the same as in previous releases. EDM no longer logs whether or not all, some, or no files are restored. This is now done with a return value from ebrestore.

The return values are:

- 0 = Restore was successful
- 1 = Restore failed
- 2 = Restored some files, not all restored

Messages for this are no longer logged in the recoveries.log file.

Auto-configuration of SGI Client Results in CD-ROM Configured as Work Item (#30222)

If you do not want to create a work item for the CD-ROM that contains IRIX software distribution, make sure, before configuring the SGI client, that the IRIX software distribution CD-ROM is not in the drive.

New Install Sets Name Restriction to Primary Media Set (#30844)

When you update from EDM 4.3 to 4.4 or 4.5, new templates are created with default restriction set to "name." If desired, you can change this default to "application" or "none" by doing either of the following:

- In the Media tab of the Backup Configuration window, mark any volumes that are labeled with the template. Then change the restriction or unclick the box to remove restrictions completely
- Select the Media tab in the Backup Configuration window and change the restriction to what you want or remove all restrictions for each affected trail

Refer to EDM Online Help for more information.

Oracle Archive Logs for AIX May Not be Visible in the GUI (#34025)

The Oracle Archive Log Files for an AIX backup may not be visible in the GUI, and they will not be restored. The workaround is to use the command line restore to retrieve these archive log files.

Running ebcrecover on Hewlett-Packard Backup Clients Fails Due to Incorrect Memory Usage (#33659)

During a restore operation, running **ebcrecover** on an HP backup client fails due to incorrect memory usage.

The workaround is to run **ebrestore** interactively from EDM:

```
# ebrestore -i
```

and then follow the prompts.

(Refer to the **ebrestore** man page for more information.)

Not All Backups Are Listed When Using Catalogs Command in ebrestore Interactive Mode (#33660)

When you use **ebrestore** in interactive mode and use the **catalogs** command, you may not see the desired backup information. Using the **catalogs** command displays only four backups at a time. However, if you change the date of a particular backup with the **date range** command, information for ten backups is provided. The backup information that you want to view may or may not appear in that list.

(Refer to the **ebrestore** man page for more information.)

Verify That All Volumes Needed for Restore Are Online Before Modifying Parameters (#33668)

If you modify the restore CLI parameters, the volumes that restore report requires can scroll off the screen. Before modifying the restore parameters, verify that all volumes that are needed for the restore operation are online.

Verify That All Volumes Needed for Restore Are Online Before Starting the Restore (#33670)

If any volume that is needed for restore is offsite, the CLI does not display a warning stating that not all volumes are online. After the Volumes Needed for Restore report appears, you need to scan the report to verify that all volumes are online before continuing with the restore operation.

Restore GUI That Is Idle for More than 8 Hours Requires Restart(#33989)

If the Restore GUI is idle for over eight hours before any restore has started or after a restore has completed, it loses its connection to the restore server. The solution is to exit the Restore GUI and restart it.

Database Backup

This section describes limitations, problems and workarounds, and documentation corrections for database backup software. Also, refer to Release Notes for specific databases.

Note: EDM 4.3.1 was the last software release that supported backups using the former "offline" backup feature of EDM for backup of Oracle, Sybase, and Informix clients. EDM software continues to support restores. However, the EDM Oracle Backup Client and EMC Backint client still support offline backups. See "Offline Backup Support" on page 1-2.

Problems

Halting Backups and Restores (#23776)

For Informix and Sybase clients, a software defect exists in that the ebrcmd process (for server-initiated backups) remains running on the EDM after an **ebbackup -halt** command. The workaround is to use the **kill** command to stop the ebrcmd process.

Always cancel database backups and restores from the Informix or Sybase system. This is the recommended way to cancel all database backups (whether the data path is over EDM Symmetrix Connect, EDM Symmetrix Path, or the network).

The **ebbackup -halt** and **ebbackup -HALT** commands are not supported for canceling database backups, only for cleaning up EDM processes if the client/server connection has been broken.

Client Reinstallation Required (#31608)

EDM database clients, including Oracle, Sybase, Informix, Backint for SAP R/3, Exchange, Lotus Notes, and SQL Server, have modifications for EDM 4.5.0. Previously installed versions of these clients work, but if you anticipate having to configure new databases for backup, or changing existing database configurations, you should reinstall these clients with the newer versions of client software distributed with EDM 4.5.0.

Modified Oracle and Informix Backup Scripts Overwrite Existing Script Even if Session Cancelled(#33780)

When you modify an existing configuration of an Oracle or Informix backup, any values that you change in the existing backup script are written to the client as soon as you click Next (or Previous). Therefore, if you later cancel the configuration without saving it, be aware that any changes that you made to the existing backup script were indeed saved and not discarded.

The workaround is to enter a new pathname for the revised backup script, which will not be associated with the configuration you are modifying if you in fact cancel the modification.

New Informix Backup Script Given Name of Existing Script, So Can Cause Inadvertent Overwrite (#33873)

When you use the Backup Configuration wizard to create a new Informix backup script, a default name ("backup_script") is offered, which might already be used for an existing script. This occurs when you create a new configuration or a duplicate configuration. You can inadvertently overwrite an existing script of the same name ("backup_script"). This would happen as soon as you click Next (or Previous). The workaround is to enter a new pathname for the new backup script.

Note: This problem was fixed for the Oracle Backup Client by ensuring that a unique new name is offered for any new backup script.

You Must Enter Connect String For Oracle Database Backup Scripts (#34064)

When configuring EDM-initiated Oracle Backup Client backups, and the RMAN (Recovery Manager) backup script is displayed, you must enter the actual connect string for the catalog database. A default value of "catdb.world" is used in the generated script (when you choose to create a new script), but you must be sure to change it to the actual catalog database connect string.

Previously, in EDM 4.4, you were instructed to include the RMAN catalog database connect string information in a file called /usr/epoch/EB_DB/*SID*.cat (where *SID* was the SID of the catalog DB). Then this file was used by EDM-initiated backups. However, the *SID*.cat file is not used by the new Backup Configuration wizard.

EDM Symmetrix Path

The following paragraphs describe a Symmetrix Path limitation and problems listed by incident code number, and associated workarounds for this release.

Problems

The following paragraphs describe problems for Symmetrix Path.

Symmetrix Path Connection Delays Could Cause Failed Backups and Restores (#24955)

Note: For use by EMC Customer Service only.

If Symmetrix Path database backups or restores fail due to a specific ST connection delay, an adjustment on the client enables it to wait longer for a Symmetrix Path connection. This connection delay can occur under a variety of circumstances, such as large loads during striping or intensive disk operations.

Note: The following symptom is required to identify this particular connection delay and failure.

The /var/adm/epoch/symmpath on the client normally has a progression of connections per work-item, such as:

```
STPsocket succeeded with File Descriptor: 0
STPbind succeeded with Hostname:STG: tommy:STG1
STPlisten succeeded with File Descriptor: 0
STPselect succeeded with Selected Descriptor: 0
STPaccept succeeded with Return Descriptor: 1
STPclose succeeded with Closed Descriptor: 0
STPclose succeeded with Closed Descriptor: 1
```

When the backup or restore operation fails because of this problem, the symptom is displayed by the following connection progression logged in /var/adm/epoch/symmpath on the client:

```
STPsocket succeeded with File Descriptor: 0
STPbind succeeded with Hostname:STG: tommy:STG1
STPlisten succeeded with File Descriptor: 0
STPselect succeeded with Timed-Out Descriptor: 0
STPclose succeeded with Closed Descriptor: 0
```

If this symptom is present, you can set an environment variable so that the relevant process waits longer for an ST connection. In general, you set the environment variable inside the script on the client that initiates the backup or restore processes. (For Informix and Sybase, the environment variable is set instead prior to initiating backups and restores: for Informix prior to launching oninit; for Sybase, the Sybase Backup Server.)

The environment variable is EB_SP_SELECT_TIMEOUT. For example, for filesystem backups and restores, you modify the startfind and startrec scripts on the client:

```
# setenv EB_SP_SELECT_TIMEOUT 600000  # 600 seconds, or 10 min.
```

UNIX Client System File Settings (#22282)

For Solaris client hosts, Symmetrix Path software requires the modification of the /etc/system file.

Note: For AIX and HP-UX, the equivalent changes need to be made using **sam clients** and **SMIT**.

The following semaphore fields, if they are specified, should be modified to contain the following values (if the current values are greater than those below, do not replace them):

```
set semsys:seminfo_semmni=600
set semsys:seminfo_semmns=600
set semsys:seminfo_semume=600
set semsys:seminfo_semmnu=600
```

In addition, the following are SCSI settings that are required for Solaris 2.5.1 only:

```
set sd:sd_error_level = 0x0
set scsi_options = 0x7F8
set sd:sd_io_time = 0x78
```

Note: On the EDM system, these modifications have been handled by the installation/update process.

Cross-Restore Symmetrix Path Backups to Network Clients (#23529)

To cross-restore a backup that is made over EDM Symmetrix Path to a network backup client, you must specifically reconfigure the Symmetrix Path client's work item to use the network (that is, to not use Symmetrix Path). You do this just as you would for a network restore to the original client.

In the EDM GUI, select the work item and disable the Use Symmetrix Path option for the work item in the Backup Configuration window before you cross-restore. After restoring, set the Use Symmetrix Path option back to its original setting if desired. Refer to the *EDM Symmetrix Path User Guide*.

Non-Symmetrix Path Cross-Client Restore uses Symmetrix Path Anyway (#21001)

When doing a cross-restore of filesystem backups from a non-EDM Symmetrix Path machine to an Symmetrix Path-enabled machine, you might inadvertently use Symmetrix Path for the restore.

For a cross-client filesystem restore, the first work item for the destination client listed in the eb.cfg file (not the GUI) is the one used to determine path during the restore. In the case of NT clients, this is usually the Registry work item. If this work item is set to use Symmetrix Path, the restore uses Symmetrix Path. If it is set to use the network, the restore will go over the network.

The workaround is to change the **use Symmetrix Transport Group: "STGn";** statement in the first work item for the destination client listed in the eb.cfg file to the setting desired for the restore.

Symmetrix Path NT Database Backups Fail with Large Number of Stripes (#21349, #21353)

When NT database backups are configured for more than eight stripes that use Symmetrix Path, several of the work item backups might fail with an "unknown UNIX error" and then all other work item backups remain in a state of no progress.

This is a problem with the open file limit. The problem is with the number of file descriptors in Solaris on the EDM. The default value is 64, which the Symmetrix Path software increases to 128, but this is still not high enough for more than eight stripes.

The workaround is to increase the file descriptors to 512 if you configure NT database backups with more than eight stripes.

In C Shell use: `% limit descriptors 512`

In Bourne Shell or K Shell: `$ ulimit -n 512`

Note: The commands can be run from the ".cshrc" (for csh) or ".profile" (for sh or ksh) of the root login or the UNIX login that is used to run backups.

ebbackup -HALT Does Not Clean Up Symmetrix Path Sockets (#21921)

Issuing **ebbackup -HALT** command does not properly release Symmetrix Path resources and repeated use could deplete them, causing backups to fail. (An error message that indicates the problem is logged in the /var/adm/epoch/symmpath logfile.)

Avoid the problem by cancelling the backup from the client.

If Symmetrix Path resources are depleted, you can run the /usr/emc/stp/stcmdmgr program and issue the **sokrel** command on both client and EDM (in either order).

Note: Do this only when no backups are running; otherwise, any currently running Symmetrix Path backups remain unfinished and uncataloged.

```
% /usr/emc/stp/stcmdmgr
STP_MANAGER> sokrel
Are you sure you want to clear all sockets ?[n] y
[ CLRSOCKOK] Clearing Socket OK.
STP_MANAGER> quit
```

Backups May Fail With Signal-inducing Events (#31288)

Backups may fail or hang to a UNIX client if an ebbackup -halt or any other signal-inducing event occurs on the EDM client. For instance, if a findxcpio is killed with any level kill-signal, a deadlock condition may occur with other findxcpio processes running on that client. This may result in a list of processes in the hung state. A progress of 0 KB/sec then appears in the backups.log for these work items.

If this occurs, call Customer Service. The known workaround requires actions by EMC service personnel.

Multiple-Work Item Backups Degrade Performance (#33081)

Running multiple, concurrent SymmPath backups MAY slow down performance of the backups. If this happens, set the concurrency to 1 for the affected machine.

EDM Symmetrix Connect

This section describes limitations, problems, and workarounds that apply to EDM Symmetrix Connect software.

Limitations

The following paragraphs call attention to current system software limitations and operating tips for the backup product.

SCSI Reservations on No Mirror Backup Clients

All Symmetrix Connect no mirror backup clients that use SCSI disk reservations, such as AIX LVM, require PowerPath 1.3 or greater on them. This requirement is due to the client using SCSI-3 Persistent Reservation Out commands that the EDM needs to be able to share Symmetrix disks. The EDM, however, does not need PowerPath on it for this type of backup client, nor does it matter if PowerPath is installed on it.

Running Multiple Filesystem Backups Concurrently

You cannot run multiple simultaneous backups of all-or-nothing UNIX filesystems.

Performing Multiple Simultaneous Backups

The -bring_mirrors_down_after_establishing switch is now fully supported in situations where you are running multiple simultaneous backups from more than one Symmetrix.

Limiting Maximum Concurrent Backups

For all Symmetrix Connect backups, the number of maximum concurrent backups per client must be greater than 1 or the backup will hang. Use the GUI Configuration: Server: Backup Options: "Maximum Backups" box for this parameter.

Exceeding the Trail Limit in the eb.cfg File

The configuration will not fail when the choice of trail number is larger than either the default or the number of available/total drives. An error message appears only once, independent of the number of created trails. This message, however, is only displayed upon a new trailset creation.

If you have a default trailset name or already existing trail, no message is displayed to you. The **eb_dc_config** command informs you of any potentially wrong or less than optimal configuration, tells you the number of available drives, and suggests that you correct the configuration. In addition, you are given the choice to continue the configuration.

Password not Allowed for Internal User

Symmetrix Connect does not allow "internal" user to have a password. When connecting to Oracle, the software uses the **connect internal** command. A failure occurs if "internal" has a password.

Oracle User Name Value

If ORA-07268 is displayed while running a Symmetrix Connect backup (with Oracle 7.3.3 running on HP-UX 11.0), verify that the Oracle user name for the work item base name has a uid and gid of less than 60,000.

Kicker Work Item Waiting for Network Job Completion

If you start a Symmetrix Connect backup and then a network backup, the network portion of the Symmetrix Connect backup (control file and archived redo logs) may not complete until all network backup work items are processed to media. This pending condition is due to the typically larger size of the network backup files versus the size of the archived redo log and control file; file size usually determines backup priority. It could also be because of the backup history of previous work items, or a Level 0 versus an incremental Level 9 backup request.

To verify this condition, issue an **ebbackup -L** command during the period in question to verify whether any items are in the schedule, including the network portion of a Symmetrix Connect backup. If the Symmetrix Connect work item 0 is still present, then the work item remains active.

Tablespaces Backed Up on rawfs Filesystems

The **eb_dc_restore -listfiles** browsing command lists only tablespaces that you requested be backed up during the configuration process. Unrequested tablespaces, backed up coincidentally as part of a rawfs backup do not appear when you issue an **eb_dc_restore -listfiles** command.

Calling User Script After BCV Split

You have the ability to call a script after the BCV devices have been split by creating it in the /usr/epoch/bin directory on the client with the name "usr_offline_BASENAME.sh," where the BASENAME is the Symmetrix Connect work item base name.

1. If this file does not exist, the software functions without an error and no message is issued to you.
2. If this file exists but is not executable, an error message appears and the backup fails.
3. If this file exists and is executable, the file is executed on the client. No output is displayed on workstation as this client file must save its output to an appropriate location. Then, either of the following actions occur:
   a. If the script returns a "0" return code, the server considers it a success, issues a message to the user, and continues processing.
   b. If the script returns a non-zero return code, the server considers it a failed backup, issues an error message, and aborts the backup.

Issuing the eb_dc_config Command when other Backups are Running

The EDM software cannot handle changes to the eb.cfg file while backups are using it. If this action occurs, the following warning message appears:

```
You cannot run this new config until the current
backups complete.
```

Only issue the **eb_dc_config** command when a backup is not running.

Mount Problem due to HP Bug

On HP platforms running HP-UX 10.20, the **mount** command occasionally fails after resynchronizing mirrors at the conclusion of a raw filesystem restore.

When this happens, you must manually run the **fsck** command to audit and interactively repair inconsistent filesystem conditions, and then issue the **mount** command on the affected partitions.

This is caused by a bug in the HP "fsck" software. HP Patch PHCO_12923 must be installed on any client running HP-UX 10.20.

Manually Splitting the SRDF Mirrors

If the SRDF mirrors are manually split by the system administrator before a backup or restore starts, the EDM software verifies that the R2 (Symmetrix mirrored) device mirrors are split.

When manual splitting of the SRDF mirrors is necessary, you must ensure that the split is performed with a command that enables both suspension of the SRDF link and makes the R2 devices write-enabled.

If you have SymmScripts installed, as an example, the **srdf_suspend_links** command suspends the SRDF link but does not make the R2 devices write-enabled while the **srdf_dbf_preproc** command suspends the SRDF link and

makes the R2 devices write-enabled. The current version of the Symmetrix Connect software fails after you issue the **srdf_suspend_links** command.

Use SymCLI commands to perform the split operation.

Default Location for Archived .ddtab and .dcrpt Files

Previously, if you had several Symmetrix Connect backup configurations, the archive files in /ep_usr would fill up, causing all backups to fail; the /ep_usr filesystem was too small.

Symmetrix Connect .ddtab and .dcrpt archives are now allocated to the location that contains backup catalogs, logs, and the database in order to take advantage of the greater amount of space in this location. Soft links are provided from the old location to the new one, and Symmetrix Connect restores can recognize the archives in either location.

Detecting an Uninstalled Client

Sometimes the **eb_dc_config** command does not recognize a certain host as a Symmetrix Connect client. A message that is similar to the following may appear:

```
edmmgr# eb_dc_config
Name of client to configure for Direct
Connect backup
:phs_k570
Client "phs_k570" is not installed.
```

This non-recognition of a client IP address could be caused if the DNS server was down when the **eb_dc_config** command was issued.

You should retry or reinstall the client.

Solaris Bug Produces Mount Failure

To do a non-rawfs Symmetrix Connect mirrored backup of a Solaris client, the filesystem block size of the client cannot be 4 KB in size. A mount failure occurs when the page size of the EDM (which is 8 K) is greater than the block size of the filesystem.

VERITAS with Distributed Multipathing

The preferred method of multipathing is by using PowerPath. VERITAS-distributed multipathing (dmp) is not supported in this release of EDM Symmetrix Connect software.

VERITAS Versions

EDM Symmetrix Connect without HSM does not require you to update to VxFS version 3.3.2. If you have an earlier version of VxFS, note that VERITAS has not certified VxFS versions earlier than 3.2.5 to be Y2000 compliant.

Backups Failing with Broken ddtab

If your Symmetrix Connect backup is failing in the client side discovery process with an error message "Broken ddtab," it may be caused by the EDM /ep_usr directory reaching its maximum capacity.

In the EDM /usr/epoch/EB/CLIENT_HOME/*machine_name* directory, there are directories with the name of the work item base name. These directories contain archived ddtabs and derpts.

To remove this limitation, you should free up some space in the /ep_usr directory, or move these directories to places with more storage, letting the old directories be links to the newly created directories.

FC-AL Support

Fibre-Channel Arbitrated Loop (FC-AL) is only supported on Solaris and HP-UX platforms. FC-AL can be used to connect Sun and HP clients to Symmetrix as well as to the EDM server unit.

Using the -wait Option for eb_dc_backup

If you are running backups from crontab, they are performed according to the time specified in the crontab. If the duration of a network backup overlaps with the start of a Symmetrix Connect backup, there might be some drive contention and backup performance could be affected.

If you use the **ebbackup -wait** command, the network work items delay execution until currently running backups complete. Currently, this **-wait** option is not available for synchronization of Symmetrix Connect backups. If using crontab, be sure of your backup sequence.

eb_dc_backup -check Command Validating Mirrors

The **eb_dc_backup** command supports the **-check** and **-validate_mirrors YES/NO** switches to perform a dry run on your backup. By default, the **eb_dc_backup -check** command causes a **-validate_mirrors YES** to be run.

Always use the **-validate_mirrors YES/NO** switch, because omitting this switch equates to YES. Be certain to use the **-validate_mirrors NO** option with the **eb_dc_backup** command if you do not want split and resynchronization operations to run on your mirrors.

Problems

The following paragraphs describe Symmetrix Connect problems listed by incident code number, and associated workarounds for this release.

Oracle uid and gid Must be Lower Than 60,000 (#30953)

If you see ORA-07268 as part of an error message while configuring a Symmetrix Connect backup, check to be sure that in the /etc/passwd file on the client, the Oracle user name for this work item base name has a uid (user ID number) and a gid (group ID number of less than 60,000. For example:

```
oracle:a:65535:65535::/ora/app/oracle/product/7.3.3
:/bin/csh
```

```
You can learn more about this problem
(ORA-07268) on the Web at
http://support.us.oracle.com/cgi-bin/cr/newgetfile_
cr.cgi?259402
```

Run the symcfg discover Command Every Time Symmetrix Configuration Changes (#30983)

Every time Symmetrix cabling, IVM layout, or Symmetrix hyper volume mapping changes on any client or the EDM, be sure to run the **symcfg discover** command.

symmir Commands Unable to see Gatekeepers (#33014)

symmir commands fail with the following error message:

```
Error opening the gatekeeper device for
communication to the Symmetrix.
```

You need symapi 4.0-111 Rev 6.0 to correct this problem.

BCV Library Partial Error Failure (#32671)

A mirror split problem happens with the following type of display while running Symmetrix 5x64 microcode:

```
Could not perform mirror operation

Symm Error Code is 97 and Error is

Partial Failure; BCV Lib error is: pair #4, Primary
device is busy or reserved..
Re-issue command.

EDM/SC ERROR: SYMM_IFT : Failed to split bcv
mirrors
```

You need symapi 4.0.2 to correct this problem.

Symmetrix Connect Can Hang If Automatic Archiving Has Not Been Started (#33042)

Symmetrix Connect can hang if automatic archiving has not been started in the Oracle instance and the redo logs are full and require archiving. As this stopping of database activity affects all Oracle applications, not just Symmetrix Connect backup, it is the responsibility of database administrators for ensure that redo log archiving is started automatically, or is being performed in some other appropriate way.

Avoid Reboot of AIX Systems During No Mirror Backups (#33464)

Rebooting an AIX client while a no-mirror backup is in progress can cause some disks to be unrecognized upon reboot. Varying the volumes offline, removing the hdisk/hdiskpower entries (rmdev -l xxx -d), and rebooting restores the AIX client to a good state. Avoid a reboot of AIX systems during no mirror backups.

Mirrored Backups May Fail When Performed Through the EDM GUI (#33470)

Configuration and launching of Symmetrix Connect mirrored backups may fail with the following symptoms when performed using the Backup Configuration wizard of the EDM GUI:

```
03/01/00 20:48:19 [ 1378:ebbackupd] output from
backup initialization command: "EDM/SC ERROR:
SYMM_ITF : Failed to establish bcv mirrors

DC_SYMMLIB ERROR: Error occurred in
sl_perform_operation_on_group

Could not perform mirror operation Symm Error Code
is 82 and Error is BCV Library error is: The
Symmetrix system call failed with error:
SYSCALL_ORDER17_HEADER_RC

EDM/SC ERROR: ./eb_dc_symm_itf -release -server -
backup Failed"
```

A similar message may appear while the mirrors attempt to split.

The workaround is to use the CLI command **eb_config** to configure Symmetrix Connect backups (refer to the **eb_config** man page for more information). You can initiate backups from the CLI or through crontab (see the crontab man page).

Detecting Changes in a Symmetrix Configuration (#33534)

Changes in the Symmetrix configuration, including disk changes, export (connectivity), and adding/removing of entire Symmetrix systems can cause the following type of error:

```
DC_SIMMLIB ERROR: Error occurred in sl_run_symsync

internal error - could not open gatekeeper

Symm Error Code is 34 and Error is

Error opening the gatekeeper device for
communication to the Symmetrix

EDM/DC ERROR: ./eb_dc_symm_itf -discover -server -
backup Failed
```

The workaround is to move the symapi database to a backup file, for example /var/symapi/db/symapi_db.bin.save. Then run the **symcfg discover** command to detect changes in the Symmetrix configuration as seen by the host.

Use a Terminating / (Slash) to Back Up Correct Oracle Archived Redo Logs (#33809, #32484))

Different Oracle versions behave in different ways regarding a path that does not terminate with a / (slash). Symmetrix Connect may mis-identify the actual archived redo logs directory if it doesn't have the terminating slash, backing up more than is required.

In an Oracle pfile (for example, init<*sid*>.ora) terminate the "log_archive_dest" path with a '/' (slash) in order that Oracle and Symmetrix Connect agree that this pathname leaf is a directory and not part of a filename.

Benign Error Occurs When a Backup Is Halted in Early Processing (#33829)

If a Symmetrix Connect backup is halted early in its processing, the following benign error may occur:

```
EDM/SC INFO: eb_dc_backup:20455 Received System or
user interrupt. Will exit cleanly ASAP

EDM/SC DEBUG: Process 20455 no phase to signal at
this time.

EDM/SC INFO: Process 20455 signaling pass 2 PID <>

Usage: grep -hblnsviw pattern file . . .
```

Network Clients and Client Installation and Update

This section describes prerequisites, limitations, problems, and workarounds for network clients and network client installation and update.

Prerequisites

The following paragraphs call attention to prerequisites for client installation.

Deinstall Old Client with Name or IP Address Identical to New Client

Before installing a new client, make sure there is no other installed client with a previous name or IP address identical to that of the new client. If this situation exists, deinstall the old client.

Before installing a client, make sure the following EDM requirements are met:

- The client must be able to translate localhost to an IP address.
- The client must be able to translate its own name to an IP address.
- The client must be able to translate the EDM name to an IP address.
- The reverse lookup table must translate the EDM IP address back to the EDM name.

For the last three conditions, the EDM must be able to make the same translation to the same IP address.

Limitations

The following paragraphs call attention to current software limitations and operating tips for network clients.

References to Work Item Exclusions Do Not Apply to NT Registry or Novell Bindery

Any references in the documentation to work item exclusions do not apply to NT Registry or to Novell Bindery type work items.

GUI Client Install Always Uses uname Hostname

Autoconfiguration fails when it is run in conjunction with client installation, if the client name that you select is a "network +name" that is different from the "hostname" of the client.

- The "hostname" is the nodename shown by **uname -n**.
- The "network name" is the symbolic name for the network address of the client's primary network interface (as determined by **gethostbyn** *hostname*).

The EDM GUI always uses the **uname** hostname to install the client software, even if you select the network name from the GUI. The installation is successful, but the autoconfiguration fails.

The workaround is that after client installation select the client name that was actually used for installation, and perform backup autoconfiguration as a separate step.

Problems

The following paragraphs describe client problems listed by incident code number, and associated workarounds for this release.

Time Zone Differences (#24996)

In certain cases, when the client and the server are in different time zones, the logging time on the server may be off.

Migration Client Update (#20992)

After you update your server to EDM 4.3.1 or greater, you must update your EDM Migration client. Do the following:

1. Upgrade the client to Solaris 2.6.
2. Upgrade VxFS on client to 3.3.2 (see "VERITAS Version Requirements" on page 4-58).
3. Update the EDM Migration client software using the EDM with HSM Option CD.
4. Reinstall the client as a backup client.

Backups of DEC Alpha Clients Running UNIX 4.0x May Fail (#22139)

A problem in the Compaq software can cause backups of some filesystems on DEC Alpha clients running UNIX 4.0x to fail with EDM 4.2.1 and later client software. Contact Compaq Customer Support for a patch with a modified libpacl.so.

Client Install Always Puts Some Files in /usr/epoch/bin (#16973, #18840)

The **eb_install_client** command completes when directed to install Sun, HP, or IBM client software in a location other than /usr/epoch/bin. The EDM product will function normally.

However, files are still placed in /usr/epoch/bin even if copies are in the new location. Do not remove the copies from /usr/epoch/bin.

Placing Commands in the Shell Login Script (#22014)

Unexpected output from target systems creates problems for the standard UNIX rsh and rcp protocols. The two most common reasons for unexpected output are related to commands in a shell login script such as .cshrc, .login, .tcshrc, and the like. The name and placement of both the system and user login scripts are specific to the shell, and sometimes to the platform. When these scripts run, an echo of some data causes an error in an stty operation.

For example, if you run a backup and observe the following message, you have probably put a command such as **stty erase** into the .cshrc file on the EDM client.

```
"stty: : Invalid Argument"
```

Good UNIX shell programming places this type of command within an *if* test that issues these commands only after it ascertains that an interactive login is occurring. If the login is noninteractive, which is the case with rcp and rsh, the echo and stty commands should not be issued.

Client Reinstall Process Overwrites edmlink.cfg (#20762)

The EDM Transfer Protocol configuration file (/usr/epoch/etc/edmlink/edmlink.cfg) contains diagnostic aids should problems occur with the EDM Transfer Protocol. When you reinstall a client, a new configuration file overwrites the one that already exists on the client. If you have customized the edmlink.cfg file, and you want to save the contents, you must do so prior to the reinstall, and manually reapply your changes to the new configuration file.

ep_install:eb_server_config Touches Installed Files (#25529)

eb_server_config and its associated scripts (**eb_install_client**) touch files after installation, which alters the checksum and permissions but does no real harm.

clnttcp_create Consistently Hangs for ~3.5 Minutes (#31118)

A 3.5 minute hang occurs when the EDM Server is trying to connect a Backup Client that is:

1. Not available (Down)
2. And the backup client resides in a different subnet than the EDM Server

You can configure a TCP/IP by using Sun's "ndd" utility that shortens this timeout. KEEP IN MIND THIS SETTING CHANGES THE TIMEOUT FOR ALL TCP CONNECTIONS ON THE EDM.

The parameter to modify is tcp_ip_abort_cinterval. To determine its current setting, enter the following command at the prompt:

```
add /dev/tcp tcp_ip_abort_cinterval
```

To set the parameter value, enter the following command at the prompt:

```
add -set /dev/tcp tcp_ip_abort_cinterval xxx
```

where xxx is the number of microseconds to wait before terminating the connection request.

Directory Change for EDM Core Dumps (#31294)

The directory that holds EDM core dumps ("/usr/epoch/etc/coredir") is now installed on /ep/home, the same filesystem that holds the backup catalogs ("/usr/epoch/EB/catalogs").

If the earlier running daemons do a core dump after an update, the core files are lost.However, this window lasts only until the daemons restart.

Red Hat Linux Install Fails (#32339)

A Red Hat defect causes an installation of the Linux client to fail.

To install the Red Hat Linux client successfully:

1. Allow root to log in to the client, per the usual GUI install panel that is used on all UNIX client installs.
2. Enable rexec on the Linux client:
   a. In the file /etc/inetd.conf, remove the "#" (comment symbol) from the start of the following line:

```
#exec      stream   tcp     nowait   root
/usr/sbin/tcpd  in.rexecd
```

   b. In the file /etc/pam.d/rexec, comment out one line in the file:

```
/etc/pam.d/rexec
```

A sample of the file follows (your file may differ slightly):

```
#auth        required      /lib/security/pampwdb.so
shadow nullok
auth         required      /lib/security/pamnologin.so
account      required      /lib/security/pampwdb.so
```

To enable rexec, comment out the line that refers to the pam_nologin.so module:

```
#auth        required      /lib/security/pampwdb.so
shadow nullok
#auth         required      /lib/security/pamnologin.so
account      required      /lib/security/pampwdb.so
```

When this file is modified, rexec is enabled.

Note: If your /etc/pam.d/rexec file contains a line that refers to the pam_securetty.so module, you cannot rexec as root. To do so, you must also comment out the line that refers to the pam_securetty.so module.

3. Install the RedHat patch for bug #2508, which fixes an rexecd problem.
4. Enter the following command to tell inetd to rescan its configuration file:

```
% kill -HUP `cat /var/run/inetd.pid`
```

Note: The quotation marks in the above command must be back quotes, not apostrophes.

Software Install or Upgrade Requires 75 MB Free Space (#32514)

An initial client install or upgrade requires 75 MB of free space in /usr/epoch.

EDM-Link Cannot Resolve Installed Clients (#33939)

EDM-Link sometimes floods the output of client install when clients have no IP address.

EDM-Link discovers that entries are in the clients-installed file for clients that are not on the network. These clients have not been de-installed, but were removed from the network. Typically the reason not to de-install is to keep these entries in the file because they have valid backups for those clients, and at some point, it may be necessary to put the client back on the network to do a restore.

Windows NT Filesystem and Applications Backup

This section describes known software limitations, problems and operating tips that apply to Windows NT backups.

Limitations

The following paragraphs describe current software limitations for Windows NT services.

Reinstalling EDM Windows NT Software in New Location Can Cause Network Work Items to Fail

Backups that were configured when EDM Windows NT Client software resided in one location can fail if the software is deinstalled and then reinstalled in a new location. The error message is similar to the following:

```
02/28/00 16:33:24 [26141:ebbackupd] stderr from host "hostname" for work item
"dc_exchange_smmf_hostname_0" produced: " [HOSTNAME:BACKUP] E-805362341: -------
BACKUP #423 -------

Syntax error on command <b DO_FILE_LIST /F/Program Files/EMC/Windows NT Backup
Client/dc_exchange_smmf_hostname_file_0 -target hostname -tsa hostname.Netware
File System -login test/edm -epassword epassword -newer -m 952357419> received
from server."
```

The workaround is to reconfigure the backups after the EDM software is installed in the new location on the Windows NT system.

Examine sbtio.log in Case of Backup or Restore Failure in Oracle Backup

In case of backup or restore failure, look at orant\rdbms80\trace\sbtio.log for possible errors. If the error code begins with a 7 (for example, 7120), contact EDM Customer Service for assistance; otherwise contact Oracle.

Drive Letter Specified In Remote Install Is Considered As Being On the Local Machine (#31656)

When you install an EDM Windows NT backup application on a remote machine and select a drive letter for the destination folder, it will be considered as a drive on the local machine. For example, if you are installing EDM NT software from NT1 to NT2, and you click Browse and select a destination folder of D:\XYZ\EMC, then the software will be installed on the local machine at that location. To specify a drive on the remote machine, do not use Browse, but instead type in the destination using the UNC format (for example, \\NT2\D$\XYZ\EMC).

Problems

The following paragraphs describe Windows NT problems listed by incident code number, and associated workarounds for this release.

EDM Services Fail to Start (#28205)

If a directory in the Windows NT system begins with "program" (case is insignificant) and is listed before \Program Files in Windows NT Explorer, the EDM Link, Epcommd, and NobleNet Portmapper does not start.

Choose one of these workarounds:

- rename the \progra* directory to something that follows \Program Files
- move any applications in \progra* to \Program Files then delete the "progra" directory
- if this is a new installation, select a destination path that is not in Program Files

edmlinkd #2113 Error Can Be Ignored (#28217)

The following entry in the Windows NT event log can be ignored:

(EB: edmlinkd #2113 ERROR There is a process on the other end of the pipe - ConnectNamedPipe hPipeOutbound Failed)

DEC Alpha Clients: EDM Windows NT Oracle Backups Must Be Configured With ntoraconfig Command (#30646)

For DEC Alpha-based EDM NT Oracle clients, the EDM Backup Configure Wizard cannot configure backups. As aworkaround, use the following command:

```
# /usr/epoch/internal/ntoraconfig
```

The man page for this command is located at /usr/epoch/internal/man/man1m/ntoraconfig.1.

Network Backups Fail After Cluster Failover Occurs (#31755)

During a backup or restore of an NT MSCS cluster file system or database, in certain failover cases (such as a user manually failing over a resource group), the EDM backup or restore process can hang. The workaround is to cancel the backup or restore operation and then restart it.

If you are using Symmetrix Path, you may need to terminate the backup/restore process on the client side and then manually clean up the Symmetrix Path sockets by issuing the **sokrel** command.

SQL Server Kicker Work Items Fail (#32607)

EDM initiated SQL Server backups of NT MSCS clusters successfully complete, except for kicker work items, which may fail or hang on the EDM. You can safely ignore these errors.

SQL Server Backup Verification May Falsely Indicate Failure (#32699)

For SQL Server clients, the verification of the backup may fail if the operation is executed very soon after the backup. That does not mean the backup did not finish successfully; rather, it is yet to be catalogued.

Error in Exchange Restores Cause Restore GUI to Fail (#33110)

When an error occurs during the restore of an Exchange database file the NT Exchange restore GUI (edmexchangerest.exe) immediately fails. The workaround is to restart the NT Exchange Restore GUI and perform the restore again.

Password For Account That Starts EpochBackup Service Cannot Have A Space (#33317)

When you install a Windows NT machine as a backup client on the EDM (using the Client Install wizard or the eb_install_client command), you must specify a user name and password for the account that starts the EpochBackup Service on the NT machine. If the password has a space, the install fails. The workaround is to change the password for that account to something that does not have a space.

EDM NT Applications May Not Appear In Start Menu (#33368)

EDM NT applications (such as SQL Server Backup Client and Exchange Backup Client) may not be listed in the Start menu after installation.

The workaround is to open the following location in Windows Explorer:

For Windows NT 4.0 - %SystemRoot%\Profiles\All users\Start Menu\Programs\EDM Windows NT Backup

For Windows 2000 - OSGsw33870

%AllUsersProfile%\Start Menu\Programs\EDM Windows NT Backup

The shortcuts are then visible in the Start menu.

Windows NT Backup Client May Be Listed in Configure EDM Backup Clients Interface (#33504)

The Applications tab of the Configure EDM Backup Clients interface should list only the installed EDM application clients such as SQL Server, Oracle, Lotus Notes, SAP/Backint, and Exchange. The Windows NT Backup Client (that is, the filesystem backup client) should not be listed, but it might appear under certain update situations. The listing of Windows NT Backup Client is not functional and should be ignored. To remove it from the Applications listing, update any NT application client (SQL Server, Exchange, etc.).

Need To Restart EDM NT Services After Windows NT Disaster Recovery (#33594)

An additional step must be added to the end of the Windows NT disaster recovery procedure (page 5-9 in the *EDM Windows NT Backup Client* user guide, P/N 300-119-001-03 Rev C). Under step 13, after sub-step d., add sub-step e:

e. In Settings > Control Panel > Services, stop and start the EDM NT services: EDM EDM-Link NT Service, EDM Epcommd NT Service, EpochBackup, and NobleNet Portmapper for TCP.

EDM-Initiated Restore of SQL Server Differential Backup Does Not Work (#34010)

The EDM server-initiated restore via ntsqlrestore for differential backups does not work. The workaround is to initiate the restore from the Windows NT client side, using the Restore SQL Server wizard or the **edmsqlrestore** command.

Hierarchical Storage Management

This section describes a limitation, problems, and workarounds for HSM software.

CAUTION: Do not use the fasthalt, fastboot, or reboot commands to reboot Solaris systems running HSM. Instead use the shutdown or init 6 command.

Limitation

The following paragraph calls attention to a current software limitation for HSM.

VERITAS Version Requirements

To use HSM, your EDM server and your EDM Migration clients must have version of VxFS 3.3.2.

Problems

The following paragraphs describe HSM bugs listed by incident code number, and associated workarounds for this release.

dodisk and diskusg Do Not See Staged Out Files (#07253)

The output from the Solaris **dodisk** and **diskusg** functions do not reflect files staged out by HSM.

emfind and emdu Run From Root Only (#12488)

The **emfind** and **emdu** commands can only be executed as root.

Errors from vi(1) and more(1) on a Staged Out File Are Not Passed to User (#13126)

When a problem occurs while staging in file data, utilities such as the **vi**(1) and **more**(1) commands on Solaris 2.6 might not report an error, but instead behave as if the file is empty. If an empty file is not expected, examine the log file for messages such as the following.

```
Feb 28 15:41:03 costello emsid[349]: #133 -- problem during stage-in; client
store 3CC4F3482F7313FE, bitfile ID 3155BA4900003BF6.

Feb 28 15:41:03 costello emsid[349]: #108 -- stage-in fails; errno 2 (No such file
or directory).
```

This problem has been reported to Sun; two reference numbers are associated with this issue:

#4013121 for **vi**(1) and #4013123 for **more**(1)

Migration Client Update (#20992)

EDM Migration client requires EDM 4.3.1 or later. After you update your server to the required version, you must update your EDM Migration client. Do the following:

1. Upgrade the client to Solaris 2.6.
2. Upgrade VxFS on client to 3.3.1 (see VERITAS Version Requirements in the previous paragraph).
3. Update the EDM Migration client software by using the EDM with HSM Option CD.
4. Reinstall the client as a backup client.

Running em_new_volume Command Displays Nblocksavail Parameter as 0 for DLT Media (#25433)

When you run the **em_new_volume** command on an EDM with the HSM option, Edm does not provide accurate values for the number of blocks that are available for DLT media. That is, the Nblocksavail output always appears as 0.

Refer to the **em_new_volume** man page for more information about the parameter.

Heavy HSM Activity Combined with File Removal Causes Veritas Kernel Deadlock (#25531)

Heavy HSM activity combined with file removal (such as can occur during heavy catalog processing on an HSM filesystem), can cause a kernel deadlock in VxFS code. Obtain the Veritas patch for this problem from Veritas. Refer to incident 32226.

A Timeout Issue Occurs with Staged Out Catalogs when Using the HSM Option (#33398)

When using EDM with the HSM option, catalogs that are staged out to volumes must be staged in again so that the restore operation can complete. Currently, a time out occurs with the client and EDM does not wait for stage-in of the catalogs. This error affects both the ebrestore CLI and the EDM Restore GUI. The error usually occurs when using an old backup for which catalogs are staged out.

A notification message appears when this problem results.

To work around this issue, retry the restore operation; the files should stage in before the timeout occurs. If not, wait a few minutes and try again.

Deinstallation Fails Intermittently #33517)

Intermittently, when cmcleansession cannot remove all HSM sessions prior to removing the package, a deinstallation fails with the error:

```
Removing EPCmsl Mod 21 of 33:   Removing module
EPCmsl ... ### Cannot clean sessions pkgrm: ERROR:
preremove script did not complete successfully

Removal of <EPCmsl> partially failed. FAILED
```

If this occurs, run the deinstallation again.

Backup and HSM

This subsection describes additional problems and workarounds for backup of EDM with HSM systems.

Baseline Backup: Media Change Requires Change to Trail Name (#12335)

If you change the type of media for a baseline backup, you must also change the trail name. If you do not change the trail name, the backups write to the old media.

Baseline Backups Not Enabled by Default

By default, baseline backups are not enabled on the EDM with HSM as shipped. So make sure that baseline backups get enabled during the overall configuration activities.

GUI and HSM

If the GUI hangs, you might have to restart some daemons on the EDM and on the migration client before you can successfully rerun **edm**.

```
# em_restart
# /usr/epoch/lib/mal/emhsmd &
```

Reusing Client Stores (#16000)

Reusing a client store name that was deleted, and then using the GUI to attach a filesystem to the store, causes the following configuration error:

```
coda: MAL: hsmapi: #914 nsm_emfsconf_exec: Invalid
staging trail: Trail_7
```

The workaround for this problem is to execute /usr/epoch/bin/emcheck on the HSM client.

Graphical User Interface

This section describes limitations and problems found in the EDM GUI.

Limitations

The following paragraphs call attention to current software limitations and a recent improvement for the GUI.

Backup Activity Wizard and Client Initiated Backups

The Backup Activity Wizard does not support starting or stopping queue management of client initiated backups. These are backups started from a client and do not have an associated kicker work item.

Stopping Backups

Stopping all backup processing using the Backup Activity Wizard may not be immediate. The EDM performs a thorough shutdown of backup processing, including backing up the local server database.

Listing Previous Backup Template

If you move a work item from one template to another, the restore GUI was only listing the current (new) template. You could not pick a backup that was done with the original (old) template.

The restore GUI template combination box has been changed to allow you to type in a template name if it's not in the list. Hit the Return key while you are in the box. You will still have to use the ebreport history to determine which template name to enter into the box.

Unknown Password

In the Backup Report window, if you cannot remember the domain administrator password, contact Customer Service for a process to recreate it.

Problems

The following paragraphs describe GUI problems.

Cannot Create Second Kicker Work Item (#28158)

You cannot create a second kicker work item using the Backup Configuration window. The workaround is to create one kicker work item, exit out of the EDM main window, and then reopen the EDM GUI to create a second kicker work item.

5 Problems Fixed in EDM 4.5.0

The following were listed as problems in *EDM 4.4.0 Software Release Notes* or were found at a customer site. They have been fixed in the EDM 4.5.0 release.

EDM Does Not Send Email When Volume Manager Requests New Media (#14387)

When new media request is encountered, mail is sent to the user about the new media request and the template name that is associated with the requested media.

(#21601, #21958)The Number of Bad Files Shown in a Report Is No Longer Misleading

In the Backup Report window, the total number of bad files shown as encountered during a backup now reflects accurately the files not backed up because they were always busy.

(#24386) Can Use Devices From Multiple Symmetrix Units in Single ST Group stcmdmgr

The configuration software stcmdmgr no longer has a defect in the **grpfmt** command. Now it can handle devices from more than one Symmetrix in a single defined ST group.

(#24420) Device Number Change for a Filesystem No Longer Requires Level 0 Backup

For backups of UNIX clients, it is no longer necessary to force a Level 0 backup if a filesystem's device number changes (for example, when new filesystems are added to an existing workitem). Incremental backups of UNIX clients now detect that the new filesystem needs to be backed up, and after the backup, the EDM can recover all files.

Backup processing is no longer sensitive to changes in the device number of a backed up filesystem. Previously, if a filesystem device number changed, and an incremental backup was done, the result was an unrecoverable backup.

(#25370) Library Manager Works During Startup While Dismounting a Volume

The Library Manager no longer fails if you restart it when a volume is mounted and another volume is manually placed into its home slot when the rest of the library unit is full.

(#25539) ebbackup No Longer Hangs After Issuing ebbackup -halt

When you issue the ebbackup -halt command, the backup no longer hangs.

(#26513) The evmeject CLI Command Works Differently

The evmeject process waits until the ejects complete before exiting.

(#27443) vmdaemon/ lmdaemon Do Not Find Available Volumes for a Queued Request

Volumes that reach their maximum number of uses (50 allocations for tape) now transition to the expired state properly.

(#27335, #28066) Offline Library Manager Not Starting

After **edmproc -restart** runs, or after a reboot, the offline_0 library manager now starts properly.

(#28087) Retrying Mirror Operations

You no longer see error messages when the EDM retries mirroring operations on the Symmetrix.

(#28094) Unencrypted Password No Longer Displays in backups.log

If the **eb_dc_backup** command is used with the **-d** (debug) switch to back up SQL Server, Oracle, or Exchange on Windows NT, the file /usr/epoch/EB/client_name/backups.log no longer contains the unencrypted password for the application's user account (i.e. the Exchange administrator account, Oracle SYSDBA account, SQL Server user account.)

(#28104) Configure Multiple SQL Server Databases

The **eb_dc_config** command and the Configure Symmetrix Connect GUI no longer fail if you enter more than one SQL Server database to be configured for backup.

(#28138) Backup Throughput Now Being Monitored

Backups with low throughput are now being monitored.

(#28171, #28189) Remote Command Works for Symmetrix Connect Configuration for Windows NT Client

The **eb_dc_config** command no longer returns error message wrongly indicating failure of a remote command to remove a *.ddtab file from the Windows NT backup client.

(#28211) File Exclusion for Work Items No Longer Appends "/" to PRUNE_FILE Directive

When you use the GUI to create a file exclusion for a work item, the EDM no longer mistakenly appends a "/" to the PRUNE_FILE directive in the eb.cfg file.

(#28242) Scheduling Large Numbers of Work Items through the Backup Activity Wizard

You can now schedule a large number of work items (50 or more) for backup through the Backup Activity Wizard.

(#28293) edmproc -shutdown Issued Too Soon Causes Communication Problems

Communication problems no longer occur between vmdaemon and an lmdaemon while using **edmproc -startup** command and then the **-shutdown** command.

(#28376) Report for Large Number of Records No Longer Results in Delayed Display

When you bring up the EDM Report window from the EDM GUI, if the default report retrieves a large number of records, the window no longer takes a long time to display.

(#28500) Oracle8 Does Not Have Intermittent Problems on HP, IBM, Sun Platforms

Oracle8 Symmetrix Path on an HP, IBM, or Sun platform, no longer has intermittent problems.

(#28261, #28264) Preserving rasd_event.cfg File Settings

With the exception of the following areas, customer changes are preserved in the rasd_event.cfg file:

- Any edm or system daemons that the customer has added to the list.
- Any rasd.cfg file changes to the filesystem usage settings.
- Preservation of sense key settings from EDM 4.4.0 or earlier.
- Any detail or message event lines from EDM 4.3.1 or earlier.

In addition, all configuration files can be converted to their default setting by calling their respective generate script with a -d flag such as generate_rasd_cfg -d, generate_rsm_cfg -d, or generate_rasd_event_cfg -d.

(#28268) Resetting the Dial-Out Prefix Number

The dialin_prefix has been changed to dialout_prefix with its value enclosed in quotation marks.

(#28338) Recycling the vmdupd Daemon

Sometimes when the vmdupd daemon was restarted, so was the ebfsd daemon. Now RASD calls the proper startup scripts for vmdupd and ebfsd.

(#27649 Backup Fails with SRDF Mirrors Split)

If the user has selected the split mirror policy, during an eb_dc_backup -check and the user has specified verify mirror operations for the backup, Symmetrix Connect only performs BCV mirror operations. It does not check the state of the SRDF mirrors. A warning message now appears when SRDF mirrors are split during the eb_dc_backup -check portion of a remote_bcv configuration. The user must re-establish the SRDF mirror link and rerun the backup.

(#27735) Scheduling a Symmetrix Connect Backup Through the EDM GUI

A single Symmetrix Connect configuration often creates several templates. The number of templates that it generates, and the number of Symmetrix Connect backups that share sets of templates are determined by **eb_dc_config** selections for the number of trails and the trail base_names that are to be used for one or more backups.

If just a single Symmetrix Connect backup exists under one set of templates, placing the "first" template (for example, "template_<trail>_1") in the crontab file through the EDM GUI causes the SC backup to run at the selected date and time. However, if multiple Symmetrix Connect backups share the same trailsets and templates, scheduling the first template causes all backups to start at the same time. Contention could result for tape resources or for Symmetrix disks and mirror states.

Refer to Chapter 9 "Multiple Simultaneous Backups and Restores" in the *EMC Data Manager Symmetrix Connect User Guide* for information about cautions when running simultaneous Symmetrix Connect backups. Also refer to the Backup Activity GUI online help file.

(#27819) System Allows Backup of Block Device

If a user attempts to back up a block device, it will be implicitly converted to a character device before it's backed up.

(#28007) Using a -destination / Switch

To prevent a restore from failing when -destination / is specified, enter an X before the / symbol such as X/. This action eliminates command ambiguity between the / symbol as a mathematical division symbol and the root destination.

(#28064) Windows NT Post-Mirror Split Script Commands Must Redirect Standard Output to Standard Error

For Symmetrix Connect on Windows NT, all commands in the post-mirror split script must redirect standard output to standard error, or the backup will fail. Append "1>2" to all commands in the script. The following is an example.

time /t >> C:\temp\post_mirror_split.log 1>2

The post-mirror split script is the user-supplied script specified in the Configure Symmetrix Connect wizard on the Post-Mirror Split Script window, or at the eb_dc_config prompt "Would you like to run a user written script on the client after mirror split is complete?" or with the eb_dc_config -post_mirror_split_script option.

(#28056) Symmetrix Standard Devices on Different RA Device Groups

This problem has been fixed by adding ra_group numbers to the MirrorVolume structure that is used in the device group name for RDF operations.

(#28081) Symmetrix Connect Fails to Re-establish after NT Backup

If the software fails to re-establish during a BCV backup of an Exchange Server, the software automatically retries the NT backup. The retry excludes the Exchange server's subdirectories from the NT filesystem backup.

(#28208) Poor Backup Error Message

The software has been updated to detect if a user specifies a mount point for a Symmetrix Connect filesystem backup and it is mounted or not.

(#28778) SYMAPI3.2 Will Not Work with New ODM Definitions for AIX Clients

In April 1999 the ODM definitions for AIX clients changed to a new format, impacting all EMC applications that depend on SYMAPI. The **symcfg discover** command fails to create the correct database.

New versions of the SYMAPI3.2 take into consideration the new format of the ODM definitions. Customers who have AIX clients with new ODM definitions should get the following version of SYMAPI:

- 3.2: v3.2-76-9
- 4.0: T4.0-102-1.0 where 1.0 or higher is acceptable.

If you have AIX clients with the older ODM definitions, you should go to the EMC ftp site to upgrade your ODM definitions. Then upgrade your SYMAPI software accordingly.

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